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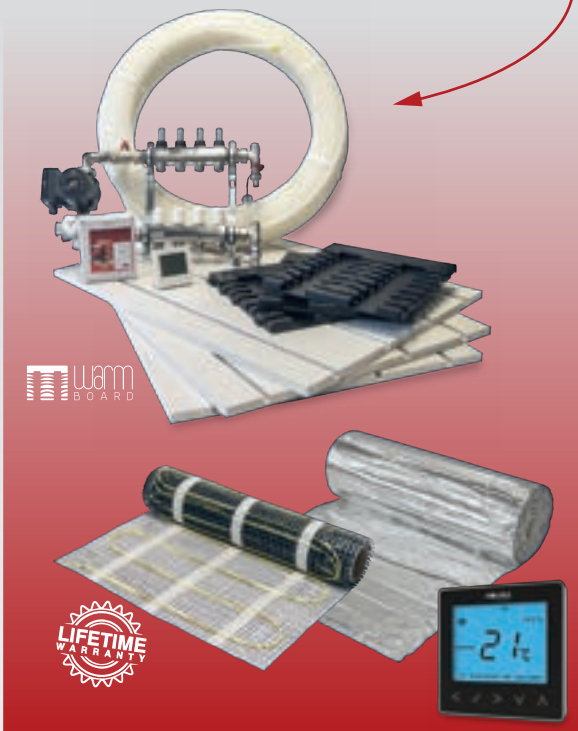

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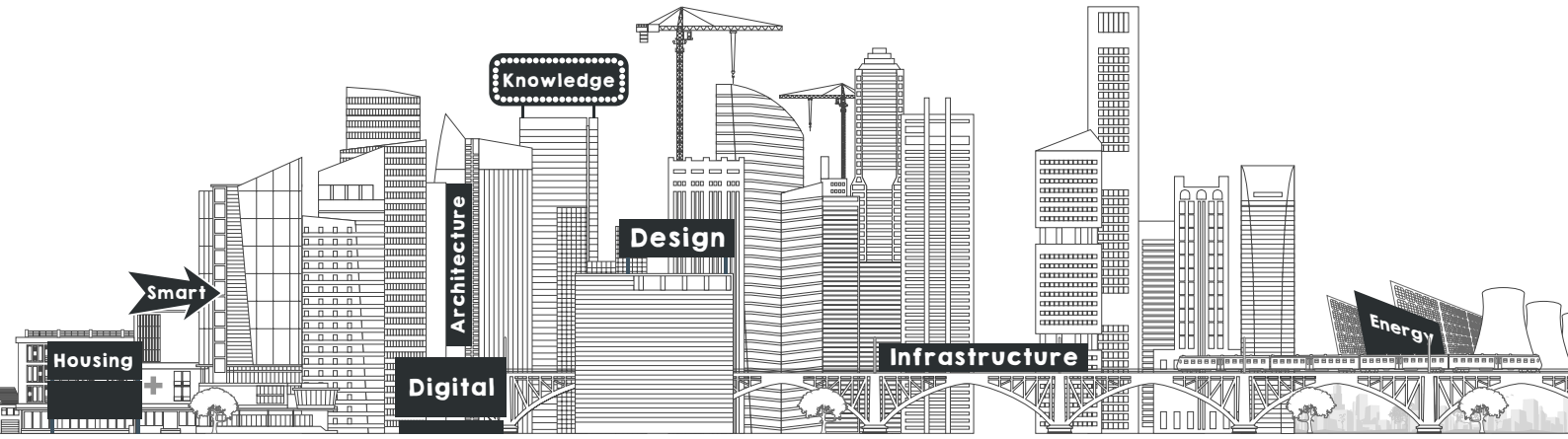

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Storing up potential

As the days get noticeably longer, it must be that time again when the industry packs its suitcase and heads to London for the annual get-together at Ecobuild. Browsing through the exhibitor list of the show each year provides an insight into how the industry is shaping up and the direction it's moving in. This year's directory is no exception as the energy storage sector boasts a bigger presence than ever before – a sure indicator that this technology is creeping ever-higher up the agenda.

As our expert contributor Steve Pester at BRE uses his column this month to explain, the BRE National Solar Centre has just launched two guides for battery storage systems: one for domestic and small commercial consumers and also a technical guide for installers.

He describes how people are unfortunately already being sold caravan batteries for domestic installations but the true household solutions do exist and are well tested in Germany, as well as the grid-scale batteries, such as the 6MW/10MWh battery bank at UKPN's Leighton Buzzard primary substation.

As the return financial incentive's reduced, much reliance will be placed on energy storage to persuade prospective consumers that the financial benefit will remain the same but instead of cashing a FiT cheque, households will not have to write a cheque for the energy bill in the first place.

Elsewhere in this month's issue we take a close look at the research published last month by the Department of Energy and Climate Change on the effects of the Renewable Heat Incentive. The benefits are analysed and the findings make for interesting reading as the Government pledges to extend its financing.

If you are attending this year's Ecobuild, please drop by to chat through any of the current issues with the REI team. We will be exhibiting on stand E5282.

Contents

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In brief

ENER-G publishes small scale CHP guide
ENER-G has published a detailed 'Essential Guide to Small Scale Combined Heat and Power', which is available free to download. The 20-page manual covers all aspects of selecting, designing and financing a CHP scheme – from applications and fuel options through to economic modelling and financing, and integrating the technology into buildings.

Advice is provided on the stages of feasibility assessment and how to comply with the CHP Quality Index; the route to gaining tax exemptions and financial incentives for CHP.

Waxman launches energy storage range
Waxman Energy, specialists in the design and distribution of solar PV solutions, has announced its new range of GoodWe battery storage devices, which can be put in as part of new installations, as well as retrofitted alongside existing PV systems.

REG sells entire portfolio
Renewable Energy Generation Limited (REG) has sold its entire operating and consented wind and solar portfolio to a fund managed by US investment company BlackRock.

This comprised 34.7MW of operating wind plant, 0.8MW of projects under construction and 42MW of consented projects awaiting funding to construction, plus the 2.64MWp Mendennick ground-mounted solar PV scheme in Cornwall. REG's 'rump' assets, which are not in the procurement and construction phase, were transferred to REG Power Management Limited, established by directors and senior management. REG Power Management has entered into construction management agreements with BlackRock to complete the construction of the consented assets.

The deal was completed in December following shareholder approval. REG was delisted from AiM in January and then entered a liquidation process.

Rural Energy's RHI calculator shows savings and payback period

As the biomass heating industry cautiously welcomes the recent reprieve of the Renewable Heat Incentive (RHI), Rural Energy has launched a handy online tool to help users quickly calculate the expected return on their RHI projects.

Hosted on the newly updated Rural Energy website, the non-domestic RHI Calculator provides a quick reference guide to expected savings and payback periods – as well as estimating the cumulative cash flow throughout the RHI period.

The calculator allows users to select the size of boiler, the expected usage level, the fuel type (ie. wood chip or wood pellets) and the current fuel, such as gas, oil, LPG or electricity. The cost of the project is also selected using a simple slider tab.

This information is then used to instantly calculate the estimated payback period, net cash benefit over 20 years and internal rate of return. *www.ruralenergy.co.uk/rhi-calculator*

Figures confirm Kingspan as small wind turbine leader

Official statistics have confirmed that more than half of all small wind turbines installed in the UK last year were Kingspan Wind models.

The company's KW6 was the highest in demand. Typically suited to the rural and agricultural sectors, the Kingspan Wind range has seen increased interest from businesses, utilities and commercial applications as well as achieving much success for investors under its Energise Funded Wind Initiative.

Kingspan Wind General Manager Richard Caldow commented: "Despite the reduction on subsidy in the UK, the KW6 remains a sound investment for many customers. Track record and a low cost of ownership make it the obvious choice for those looking to wind as an alternative energy source.

"Its popularity doesn't just apply to the UK and Irish markets; we have increased fleet run hours in the offshore sector with new installations on unmanned oil and gas platforms in the North Sea and Indian Ocean as a result of our KW3EX being the first and only Atex approved small wind turbine in the world."

Available on mast heights from 9m to 20m, the KW6 is certified under the MCS scheme for single, split and three phase connections.

UK Energy Storage needs defining, says industry

The chief of the UK's Electricity Storage Network (ESN) has called on the Government to clearly define the storage sector, insisting the technologies are proven and the demand evident, and that – with the appropriate market framework in place – storage could rapidly be deployed across Britain

Dr Jill Cainey, Director of the ESN, explained that the UK storage market is coming to fruition with National Grid currently tendering 200MW and another 500MW expected to be requested. She added: "Storage is now part of the energy debate and the ESN looks forward to hearing the Government's plans for supporting the industry."

A suite of utility scale storage projects is expected to come on stream across Britain this year including a 5MW/15MWh Liquid Air Energy Storage system funded by the Energy Storage Technology Demonstration Competition run by DECC. The Government has committed more than £80m of funding to support research and design in electricity storage programmes.

The storage market is expected to undergo huge growth in the next few years with research and consulting firm Eunomia reporting the UK could deliver over 1.6GW of capacity by 2020.

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Clean energy investment for NHS Trust

UK Green Investment Bank plc (GIB) and DLL have committed £6.9m to a programme of energy saving measures at Salford Royal NHS Foundation Trust. GIB has committed £3.4m to the scheme as part of the £50m NHS energy efficiency funding alliance that it established with DLL in 2014.

The project was procured through the Carbon and Energy Fund (CEF) framework, with Vital Energi appointed as the Trust partner. The design, construction, installation and ongoing asset management of the scheme will be carried out by Vital Energi under a 15-year performance contract.

The energy centre at Salford Royal will undergo a full refresh, with the installation of a new 2.5MW combined heat and power engine. A series of energy reduction measures will also be put in place, including LED lighting and the optimisation of the building management system.

The project, which is due for completion by the end of 2016, is expected to cut the cost of energy to the Trust by £1.9m per year.

Merger paves way for solar fabric first

Solar Cloth Company (SCC) and Base Structures (BASE) have announced that they have merged. The joining of the two companies will make it possible for lightweight fabric structures and carports to generate clean solar energy, which has not been possible until now.

SCC is the market leader in designing and applying lightweight copper indium gallium selenide (CIGS) solar technology to non-load bearing roofs. BASE designs, manufactures and installs iconic fabric structures, including the 'Up at the O2' Walkway on the Millennium Dome, London 2012 Basketball Arena, and Ben Ainslie's Racing Headquarters at Portsmouth.

In combining their expertise, the two companies will integrate renewable energy generation into elegant fabric structures at a competitive price point and without compromising on design or aesthetics – a first for the industry.

The initial focus of the two companies will be on a range of solar carports, a nascent market that is failing to coalesce due to a high price point and poor design. The planned solar carports will charge electric vehicles, power lighting, CCTV and parking management as well as generating energy for power-hungry sites.

Motorway signs to carry green energy logo

In a sign of the changing times, an energy company logo will this month appear on motorway signs for the first time – showing electric car drivers at which services they can charge up.

Ecotricity, whose Electric Highway is the most comprehensive car charging network in Europe, and whose 260 Ecotricity Pumps cover almost the entire motorway network, will feature on Roadchef signs alongside such household names as WH Smith, McDonald's and Costa.

Dale Vince, founder of Ecotricity and the Electric Highway, says: "There are now over 50,000 electric cars in Britain; that's more than a tenfold increase in two years, and this exponential growth is reflected in the use of the Electric Highway, which powered 15 million miles of emission-free driving last year – all powered from the wind and the sun."

Ecotricity believes that by 2030 every new car should be electric or a plug-in hybrid, and that by 2040 they should be the only cars on the road.

The first Ecotricity sign has already appeared at Roadchef's Sedgemoor services, with additional signs to be installed at Hamilton and Norton Canes over coming weeks. Ecotricity signs will soon be installed across all 28 Roadchef motorway locations.

Eight-figure deal to drive forward tidal lagoon programme

Gupta family interests, which have been investing heavily in UK energy and industrial assets over recent months, have committed to an eight-figure investment in the development of tidal lagoon power plants in the UK and India.

The move is part of a wider strategy by the Guptas' global energy and commodities company, SIMEC, to create multi-billion-pound renewable energy capacity worldwide and apply innovative technologies to provide low-cost power for energy-intensive industries, particularly steel.

The past year has seen SIMEC and sister company Liberty House acquire extensive UK power generation, steel production and engineering capacity, including the 393MW Uskmouth Power Station at Newport.

This latest investment gives Gupta interests a substantial stake in Tidal Lagoon plc, a holding company established by Tidal Lagoon Power Ltd to finance the development of full-scale tidal lagoons here and abroad.

The world-first Swansea Bay Tidal Lagoon will open up for the UK the option of delivering a programme of larger lagoons. Tidal Lagoon Power is pursuing five such schemes that, combined with the Swansea Bay project, could meet 8% of UK electricity demand for 120 years.

Proposed schemes at Cardiff and Newport, for which planning applications are expected in 2017 and 2018 respectively, represent some 4,000MW of lagoon power and £10bn of capital investment.

The agreement also creates a joint venture between SIMEC and Tidal Lagoon Power to develop large-scale tidal lagoons in India.

Unique solar funding model

An innovative model for funding solar projects developed by Public Power Solutions (PPS) and delivered by Abundance Investment has been given the go-ahead in Wiltshire.

PPS, a wholly owned company of Swindon Borough Council, has devised a unique blend of public sector and community investment to fund Swindon Community Solar Farm at Common Farm, Wroughton, near Swindon. The £4.8m construction cost of the solar farm will be met by a £3m investment from Swindon Borough Council plus a £1.8m public offer of Council Solar Bonds structured by Abundance. Local people will be able to invest from just £5 in the solar farm.

The bonds are expected to have an estimated six percent effective rate of return over 20 years.

Sixty-five percent of the profits from the solar farm would go towards local community initiatives, with the remaining 35 percent to investors and Swindon Borough Council.

Bristol offers grants worth up to £10k for local community energy projects

Bristol City Council is offering loans of up to £10,000 to community energy groups for sustainable energy projects in their area.

The funds, made available through the Bristol Community Energy Fund (BCEF), are designed to back activities with one or more of the following aims:

- Support local people to lower their energy use
- Support local people's move toward cleaner and renewable sources of energy
- Support local people to take measures that can help them meet their energy needs affordably.

Funding is available in two categories: up to £2,000 or up to £10,000. The Small Grants are targeted at small organisations with charitable aims, based and working in the Bristol area. The Large Grants programme is available for scaled up projects, but can also be used to cover capital costs of renewable technologies forming the basis of innovative research projects.

Hydro firm commits to £25m new investment in Scottish Highlands

Perth-based Green Highland Renewables is set to start work on a major new hydro scheme at Loch Eilde Mor, in the hills above Kinlochleven.

The £13.6m project is fully funded by the hydro firm's owners Ancala Renewables and is one of several projects the firm is looking to develop across the Highlands in what it calls "an extremely busy two years" ahead.

Green Highland Renewables CEO Mark Mathieson said: "In the last four years we have constructed and commissioned 25 schemes totalling 17MW across the Highlands and in the process invested £62m – the majority going to local construction firms and contractors."

DECC survey reveals success of RHI scheme

The Renewable Heat Incentive (RHI) has been critical to decarbonising the UK heat sector and the vast majority of applicants have been happy under it, according to new research reports published by the Department of Energy and Climate Change (DECC) .

The fresh analysis found nearly 90 percent of applicants to the RHI scheme are satisfied with their new systems.

The research was commissioned in order to better understand the administration, delivery and performance of the scheme and explore its effects on the customers and the supply chain.

The domestic and non-domestic RHIs provide financial incentives for consumers to install renewable heating in place of fossil fuels and are open to homeowners and landlords, commercial, industrial, public, not-for-profit and community generators of renewable heat.

The new reports, published last month, show the positive impact of the RHI schemes, with the majority of accredited renewable heat installers reporting that the RHI had been wholly positive in its influence on the renewable heat technology market.

The evaluation reports follow the Government's pledge to increase funding for the RHI to £1.15bn in 2021 to ensure that the UK continues to make progress towards its climate goals while reforming the scheme to improve value for money, delivering savings of almost £700m by 2020-21.

Technologies installed

76% of MCS renewable heat installers offered two or more technology types, with 58% offering three or more. In addition, 44% of MCS installers installed non-renewable heat technologies alongside renewable heat technologies.

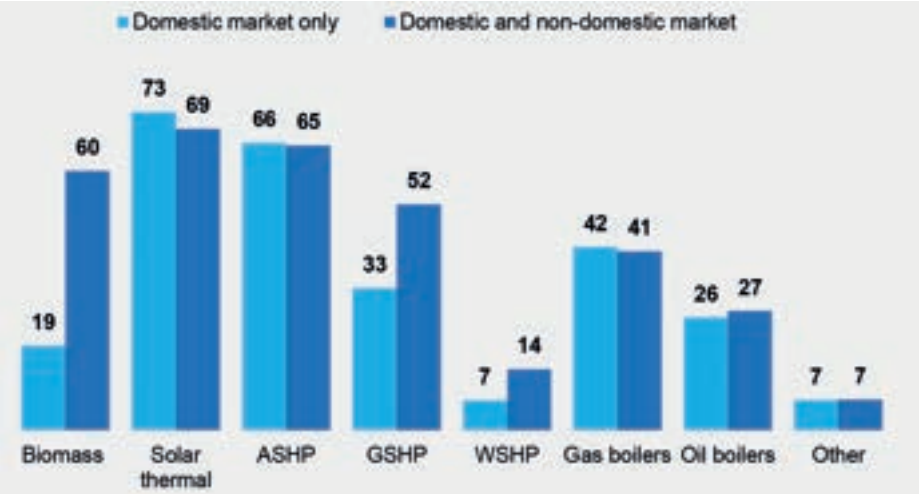
Energy Minister Lord Bourne said: "Reforming how we use energy for heating is critical to achieving secure, affordable and clean energy for families and businesses across the country. That is why the Government will be pushing a more cost-effective, targeted Renewable Heat Incentive scheme for the next five years."

The reports evaluated the domestic and non-domestic RHI, Heat Pumps in District Heating, combined heat and power and district heating and cooling in the UK, drivers of growth and cost changes in European renewable heat technologies, and the Renewable Heat Premium Payment scheme, along with scope for cost reductions.

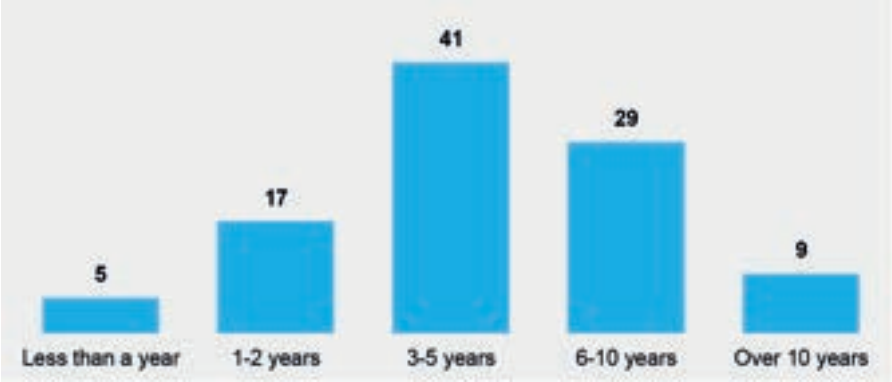
Some of the key findings revealed by the research are:

- 63% of non-domestic applicants would not have installed a renewable heat technology if not for the RHI

Technologies installed by market served



Length of time as an installer (%)



Quality of installations and the MCS

55% of installers perceived the quality of installations to have improved as a result of the MCS, whilst just 6% felt that it had deteriorated. 39% felt that it had neither improved nor deteriorated.

- The majority of applicants (87%) were satisfied with the operation of their installation
- 88% of applicants would recommend their renewable heat technology to others
- The European biomass heat market is moving into a more competitive phase with a wider range of boiler suppliers available to consumers than ever before
- The falling costs of biomass represent an opportunity for the UK to import the technologies from Europe; therefore adopting late mover advantage
- The DECC report sees potential for the market growing to a point where over 800MW of additional capacity are added each year, and could anticipate a real terms reduction in installation costs of between 9% and 11% resulting from the development of mass market. Overall costs (including the lifetime fuel costs) are forecast to come down by a third under mass-market conditions, looking at the UK market as a whole.

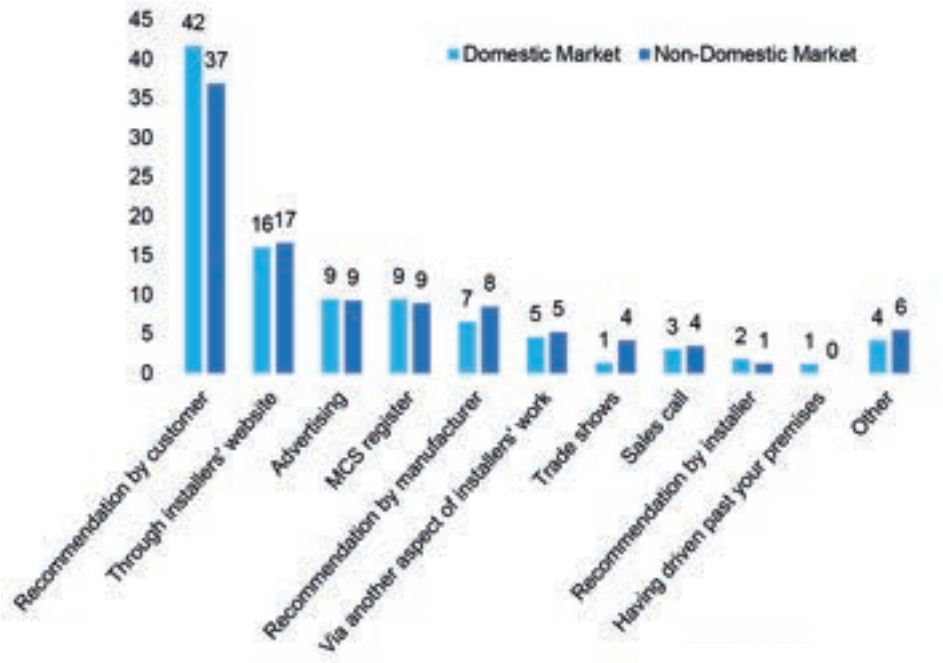
Frank Aaskov, Policy Analyst at the REA, said: "The reports show that consumers and businesses are in general very satisfied with their renewable heat installations, and 88% would recommend their renewable heat technology to others.

"There is always room for improvement, both in the RHI and within the sector, but it is clear that biomass and wood heating is a modern and mature technology that has huge potential for growth. We hope this is reflected in the Government's reform of the RHI, when this consultation is launched later this quarter."

Cost and effort of MCS accreditation

67% of installers felt that the costs and effort of being MCS accredited were "not proportional to the volume of installations that it brought to their organisation". This is consistent with the perception that very few customers find their installer through the MCS register.

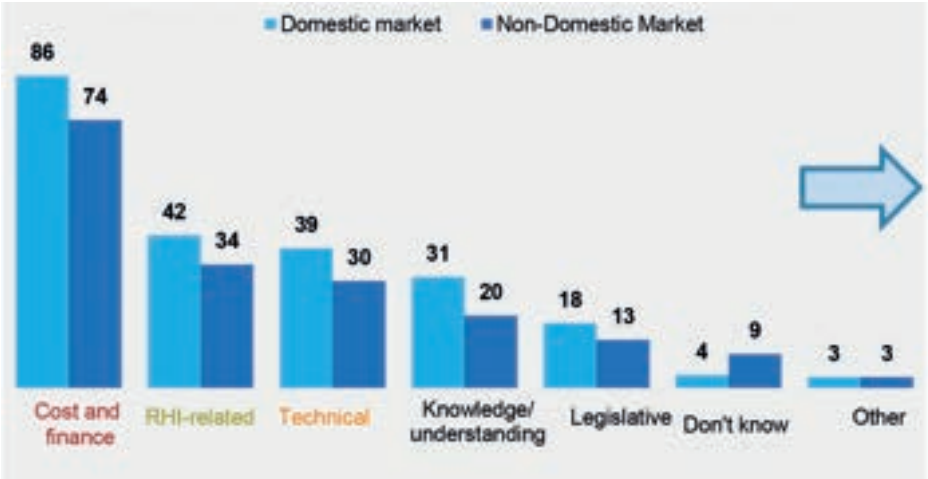
Customer route to installers (%)



Perceived motivation of customers

Response	Domestic (%)	Non-Domestic (%)
Financial impact of the technologies, inc. RHI	80	75
Financial impact of the technologies, exc. RHI	8	8
Environmental motivations	7	5
Legislative requirements	2	5

Main barriers to installing renewable heat technologies (%)



Perceptions of the postive influence of the RHI by market (%)

How many installed units can be attributed to the RHI?

42% of installers in the non-domestic market felt that "none" of their installations would have gone ahead without the RHI. This figure compares to 23% for the domestic market.

Key findings

*** Who were the MCS renewable heat technology installers?**

Renewable heat technology installers registered under the MCS included organisations that operated across both the domestic and non-domestic markets, with 78% having installed renewable heat technologies for over three years.

Installers offered a wide range of renewable heat technologies (76% of MCS installers were able to provide two or more technology types), as well as conventional fossil fuel-based heat systems (44% of MCS installers reported to install non-renewable heat technologies).

*** How did they perceive the state of the market?**

More than 60% of installers (61% in the domestic market and 65% in the non-domestic market) perceived that demand for renewable heat technologies had increased since 2013, with organisations that installed biomass boilers being the most likely to have experienced this rise.

The most common way in which installers responded to the increase was to 'work harder' (reported by 39% of installers serving both the domestic and the non-domestic markets).

Around three quarters (76%) of installers felt that the renewable heat technology market was competitive. While increased competition has resulted in some installers expanding their services beyond renewable heat, there was also a perception among installers that competition was resulting in installers sometimes providing a worse service (43%). This was much higher amongst installers that worked across both markets (52%) compared to those that only served the domestic market (21%).

*** What did they think of the MCS?**

Although more than half (55%) of installers believed that the quality of installations had improved under the MCS, around two-thirds (67%) felt that the costs and effort of being MCS accredited were actually 'not proportional to the volume of installations that it brought to their organisation'.

*** How did MCS renewable heat installers rate their training and skills?**

The overwhelming majority (81%) of installers were confident in the training they had received on installing renewable heat technologies. Despite high levels of confidence in their own training, around two-thirds (68%) of installers believed that general skill levels within the renewable heat technology market were, in contrast, merely 'satisfactory' or even 'poor'.

*** What were customers' motivations and barriers to installing a renewable heating technology?**

Installers said clients were most likely to hear about their services through recommendations from previous customers (42% in the domestic market and 37% in the non-domestic market). Financial considerations were perceived to be the biggest driver behind the take up of renewable technologies in both markets (80% in domestic and 75% in non-domestic), while environmental considerations were secondary (7% in the domestic market and 5% in the non-domestic market).

The majority of installers (86% in the domestic market and 74% in the non-domestic market) believed that finance was also the key barrier preventing potential customers from choosing renewables. Specifically, upfront costs (80% in domestic market and 63% in non-domestic market) and lack of access to suitable finance (28% across both markets) were identified as the most significant obstacles to the greater roll out of renewable heat systems.

*** What has the influence of the RHI been?**

Nearly three in five installers (58%) felt that the RHI had been wholly positive in its influence on the renewable heat technology market, with 34% believing that the influence of the RHI was both positive and negative and 8% reporting that the scheme had been wholly negative. Increases in enquiries (56% in the domestic market only and 80% in the domestic and non-domestic markets) was the most commonly cited benefit, while the uncertainty of the degression mechanism was considered to be a key limitation of the scheme by 24% of MCS installers.

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Energy related Products (ErP) Directive (2009/125/EC)

The Energy related Products Directive (ErP) came into force on 26th September 2015. The ErP Directive affects all heating and hot water products with an output equal to or less than 400kW.

The ErP is comprised of two Directives: *Ecodesign* and *Energy Labelling*.

- *Ecodesign* sets a minimum energy performance and environment criteria for energy related products
- *Energy Labelling* requires the product to display a label showing the product's efficiency band (between A+++ to G).

Energy labels are also required for a complete installed system. Heat pump installers are responsible for providing the package label that should display the performance data of the heat pump, temperature control and solar device once installed. The European Commission has produced an online Energy Label generator that can be found on its website: **http://eepf-energylabelgenerator.eu/**.

MIS 3005 Issue 4.3 was updated on **6th May 2015** to be in line with the ErP requirements, and from **26th March 2016** MCS Contractors will be required to comply with MIS 3005 Issue 4.3.

As part of the updates to MIS 3005, MCS now lists the following data for MCS certified heat pump products on the product section of the MCS website (**http://www.microgenerationcertification.org/consumers/product-search**):

- Seasonal Co-efficient of Performance (SCOP) – electrically driven heat pumps
- Seasonal Prime Energy Ratio (SPER) – gas absorption heat pumps

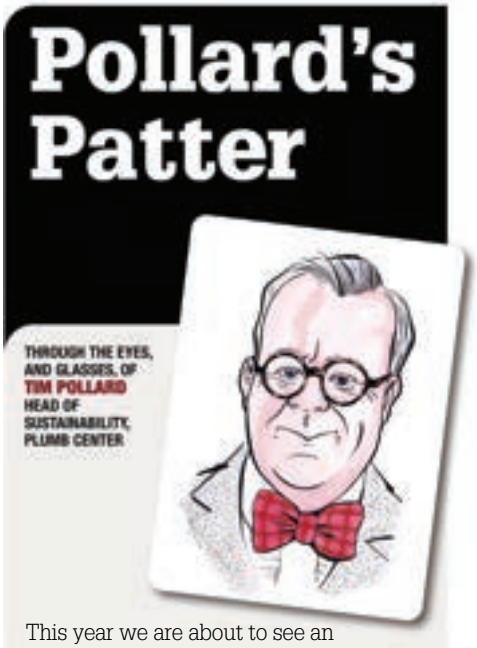
It is important to note that, whilst non ErP compliant heat pumps may be sold, provided they were placed on the market before 26th September 2015, non ErP compliant heat pumps installed after the 25th March 2016 will not be eligible for MCS Certification or the Renewable Heat Incentive (RHI) support.

Some heat pump manufacturers are providing ErP guidance and training to installers that use their products, so if you are unsure about what you will need to do when ErP comes into force, manufacturers may be able to provide this additional guidance.

If a heat pump is MCS certified before 26th September 2015, MCS Contractors are allowed to use the SPF value from the HEG (MCS 021 V2.0) up until 25th March 2016. From 26th March 2016, MCS Contractors will be required to comply with MIS 3005 Issue 4.3, calculating product specific SPFs using either the Seasonal Co-efficient of Performance (SCOP) for electrically driven heat pumps or Seasonal Prime Energy Ratio (SPER) for gas absorption heat pumps.

If a customer is looking at investing in a heat pump or in the process of getting a heat pump installed that is currently on the MCS website, then make sure it will be installed and commissioned before 25th March 2016 as any product that does not provide meet the new MCS standards will be removed on 26th March 2016 and they would no longer be able to claim the RHI.

Opinion



This year we are about to see an acceleration of what will be the biggest infrastructure programme in our lifetimes - the installation of household smart meters for energy supply. Gas and energy suppliers are required to install smart meters in every home and business in Great Britain, with the target of having 20 million smart meters installed by the end of 2018. That's quite a challenge.

The theory is that if customers are more knowledgeable about how they use their energy and how much they pay for it, they will become more interested in reducing their consumption and bills. There are some differences in opinion about how effective this will actually prove to be, but I think we should surely be encouraged by anything which promotes greater awareness of energy efficiency and how the value, rather than the cost, of renewables should be the telling calculation.

The principle issue is that whilst we all love moaning about our energy bills, few of us are willing to invest hard-earned cash in doing something about it. As an owner of an electricity smart meter for the past two years, courtesy of my home electricity supplier, I have found it particularly useful in understanding the implications of appliances and lighting. Smart meters also mean that energy bills are no longer estimated but are accurately calculated at every billing point, thus removing any 'surprises' and the building up of unnecessary credits.

The surprise success of the US onshore wind industry and lessons for the UK

Gordon Moran, writing for the European Energy Centre (EEC), explores the valuable lessons that the UK can glean from the onshore wind industry in the US

The US is often perceived as unreceptive to renewable energy technologies. However, it has recently developed a large-scale wind industry in a relatively brief period. For example, Texas now gets 10 percent of its electricity supply from wind-generated power, up from less than threee percent in 2007. Though there are notable differences between the US and the UK, such as their size, the rapid development of the US industry has some valuable lessons for the UK.

The support available for constructing wind farms in many parts of the United States is robust, with strong tax incentives for their installation in many states and support on a federal level in the form of a tax credit. The combination of state and federal level support minimises the investment risk if funding at either level were to be withdrawn, providing a flexible set of financial options that installers can utilise across the country.

The UK onshore wind industry has recently suffered a setback as the Government has substantially reduced financial support, leading to a decline in predicted rates of future installations and affecting levels of private sector investment. As subsidies for the wind industry are solely decided at the national level in the UK, there have been calls for greater devolution of energy policy to the devolved nations and on a regional level.

This could include local funding options for subsidy support for onshore wind, as well as control over planning regulations. For example, changes in the maximum permitted turbine height would aid the industry as new turbines with larger blades could be installed cost-competitively without Government support. Tax regimes that encourage community ownership schemes also help foster a more benign attitude towards the technology by the public, as has been seen in other parts of Europe and the United States. This could be encouraged even more extensively in the United Kingdom than it already is, at least on a regional level.

Maximising the value of solar

Delivering the most from solar generation is now the key goal, argues **Steve Pester**, BRE

The FiT cuts aren't quite as bad as we'd all feared – but they are still substantial. So, maximising the value of PV now relies on 'self-consumption', ie. using as much as possible of the generated energy on site instead of exporting it to the grid.

When energy is generated that is above the building demand, it has to go somewhere. So, power diverter products have arrived on the scene to capture some of the excess energy – usually in the form of heated water.

All well and good, however, the biggest buzz right now is around battery storage – much more expensive than power diverters, but with the potential to improve the self-consumption of an average household with a PV system from 30% to around 70% (or more, depending on PV and battery sizing, usage patterns, etc).

The electric vehicle market has been driving battery innovation for a number of years (check out Tesla's website) – and anyone in the business will have noticed all the hype – but it does seem that the age of storage may finally be starting to become a reality.

But what does a battery storage system consist of? How long is a piece of string? Already, there are stories of people being sold caravan batteries for domestic installations; then there are bone fide household solutions, already well tested in Germany; right up to grid-scale batteries, such as the 6MW/10MWh battery bank at UKPN's Leighton Buzzard primary substation. That's a huge range of sizes of kit – and, up to now, virtually no installation standards or guidance in sight!

Fortunately, help is here – the BRE National Solar Centre has just launched two guides: one for domestic and small commercial consumers and also a technical guide for installers.

These and several other third party guides can be found on the NSC website at **www.bre.co.uk/nsc** (scroll down, and select 'Our Library').

MCS pulls plug on heat pump range after false test data probe

Administrators of the Microgeneration Certification Scheme (MCS) have pulled the plug on a range of renewable energy products already on the UK market after the test results they had accepted were found to be false

Czech testing house SZU admitted to Renewable Energy Installer magazine that it had misinterpreted the MCS accreditation criteria and used data from an incorrect test on a single product and wrongly applied the results across the entire range.

News of the product withdrawal was published on the MCS website last week, five months after Spanish manufacturer Energy Panel introduced its Thermoboil range on the UK market .

At the time of the launch last September, the company proudly claimed: "Energy Panel is the first and unique company who [sic] obtain MCS Certification on the Solar Assisted Heat Pump according to the existing standards and regulations.

"MCS is a mark of quality and demonstrates compliance to English industry standards that companies strive to meet. It highlights to consumers that companies are able to consistently install or manufacture to the highest quality every time."

However, the MCS has been forced to withdraw the company's accreditation after an investigation revealed Czech testing house SZU had wrongly applied the incorrect criteria across the entire range.

The single product that was tested has also been pulled from the MCS scheme after it was discovered that examiners had used water and not nitrogen in a crucial test to confirm compliance with EN ISO 9806.

Installers have now been told they will not be able to register the installation of any of the removed solar-assisted heat pumps on the MCS database or create an MCS certificate "as the product was wrongly certified".

An MCS statement said the manufacturer and certification body are currently working together to rectify the error. It added: "They aim to reinstate the products on the MCS Installation Database as soon as possible."

Milano Holomet, head of testing (heating products) at certification body SZU said they were surprised by the MCS decision.

"We obtained information verbally from the MCS, not written, on how to deal with the structure of the certification," he told REI. "We worked with the answers we were given to register this range of products.

"However, it is clear that this was not correct, we did not achieve what was asked of us. The criteria says all types of products should be tested individually – we only tested one model.

"We are talkng with the MCS and I don't expect any other misunderstanding."

One source close to the inquiry told REI: "This does raise a question mark on whether the MCS standards are being differently applied and policed across Europe.

"How much scrutiny is given to accepting test results on the confirmation of a testing body? A cursory glance through the paperwork should have revealed this mistake before the product was allowed anywhere near the MCS scheme."

A Solar Assisted Heat Pump (SAHP) is a system which absorbs atmospheric heat (eg. via an external absorber) and turns this into useful heat energy for domestic hot water. An external absorber acts as an evaporator and utilises the heat in the atmosphere as well as direct solar radiation.

Currently, the only MCS-certified SAHP system is manufactured by UK-based Magic Thermodynamic Box Limited, whose products are all tested by the BRE.

The Energy Panel Thermoboil models removed from the MCS certified list are confirmed as:

TB 75E (SZU0005-01)
TB 100E (SZU0005-02)
TB 110E (SZU0005-03)
TB 180E (SZU0005-04)
TB 200E (SZU0005-05)
TB 250E (SZU0005-06)
TB 300E (SZU0005-07).

A spokesperson for Energy Panel was unavailable for comment but one industry leader described to REI how the incident had caused damage to the fledgling thermodynamic industry,

Alistair Smit, the co-founder of the company behind the Magic Thermodynamic Box, described the background to the situation and the rocky path to market for the emerging technology.

"The UK thermodynamic industry, now classified as Solar Assisted Heat Pumps (SAHP) under the Micro Certification Scheme, has not had an easy path thus far," he explained.

" In the industry it is known that in 2012 a European manufacturer took Gemserv, who are the license holders of the MCS, to court because they challenged and subsequently prevented them listing their supplied thermodynamic products under a Solar Thermal (Domestic Hot Water) category, based on the fact that the product uses refrigerant gas in the thermodynamic panel as a heat transfer medium and not water.

"As a manufacturer we chose not to follow this approach at the time as we feared the MCS would take this view. Our turnover as a business would have increased by 80% at the time if we had chosen to also follow suit. At this point we also met with the MCS to agree that a European Standard was needed for Thermodynamics as a product class. The technology was sound and we strongly felt that it deserved a place in the UK – a place that we were willing to show complete commitment to in order to achieve. The technology just needed to be regulated and protected so that confidence could grow in this innovative technology.

European Standard

"Following the MCS being approached with this proposition the first win for the industry was that they agreed and a working group was established which would ultimately sculpt the standard for the technology, both on product performance and installer methodology. The working group started work on this European standard in February 2013 with the different groups within the industry who were also all invited to participate to share their view or raise any concerns they may have had.

"In December 2015 after working through all of the respective comments from industry and consultation periods we as an industry managed to succeed in getting a European standard published for Solar Assisted Heat Pumps. During this process the working group met on average on a monthly basis. All manufacturers were also invited to each of these meetings either to attend in person or via a conference call. Attendance at all of the meetings is voluntary but attendance was minuted. It is therefore not possible to get to the end of such a process and not be fully conversant with the Product Standard and what would need to be adhered to at testing in order to achieve compliance.

"The Thermodynamic industry in the UK has definitely been damaged..."

"Following the approval of the Product and Installer standard it is ratified into law.

"As manufacturers it is then our job to test our products at a chosen UKAS accredited test centre to show compliance of the product as being accredited by the UKAS test centre to the standards. In this effort we also worked closely with Calorex another UK manufacturer. Richard Carrington and Lee Austin, Directors from Calorex, were the first UK company to achieve MCS registration for Air Heat Pumps and so their experience in this was also very helpful to us in this process.

"For our testing we chose to go to the BRE in the UK. The BRE 'has a history stretching back over 90 years, which has seen the bringing together of a number of separate research, testing and approvals organisations during that time.' The BRE works to ensure 'that products and services protect people, property and the planet' and 'is a world leading multi-disciplinary building science centre with a mission to improve the build environment through research and knowledge generation.' We could have chosen to have our products tested anywhere else in Europe under the UKAS scheme if we had wished. Such a choice would have been cheaper and a faster process for us to achieve. However, we are passionate about what we do as a UK business and wanted British for the UK industry. This was also going to be a historical moment getting the first SAHP approved with the MCS based on a new European Standard and we wanted to do this in partnership with the Bre. By having our product tested there led to it being selected by Zero Bills Homes, an Eco Home Developer, as part of their passive home building solution and may also now have the opportunity of appearing on Channel 4's 'George Clark's Amazing Spaces'. This follows a previous appearance where the product was also featured on Channel 4's 'Grand Designs' with Kevin McLeod.

"Within the different countries of the EU there are accreditation and certification bodies recognised by their respective Governments to carry out assessment and verification against European standards of testing. There is also an agreement that once tested by such a local test house it is considered 'tested once, accepted everywhere' the purpose of which is to support export trade through the removal of technical barriers. There is no double check procedure in place at the recipient country of any passported testing results. The MCS unfortunately in this instance simply act like a post box and receive the information and then list the product as being compliant based on the sending countries confirmation.

MCS framework

"The risk of such a process is what has happened here. Products having to be removed from the MCS approved list, customers having to be advised why these products they have purchased are no longer considered as being MCS approved and Installers having to be informed how to now deal with the commissioning of these systems within the MCS framework.

"It seems the standard was not interpreted correctly by the Spanish manufacturer nor the Czech Test House and the 'MCS has been forced to withdraw the named company's listed products after an investigation revealed the Czech testing house SZU have wrongly applied the incorrect criteria across the entire range.' Additionally, the 'single product that was tested has also been pulled from the MCS scheme after it was found examiners had used water and not nitrogen in a crucial test to confirm compliance with EN ISO 9806.' A very similar incident that was originally legally disputed by the MCS in Nov 2012.

"The Thermodynamic industry in the UK has definitely been damaged by both of these incidents and hopefully something like this will not happen again. The SAHP is an innovative great product that provides hot water 24-7, 365 days of the year and works like a fridge in reverse. It is well deserving of a place at the table with the other more established Renewable Energy technologies."

Energy seminar series to fuel this year's Ecobuild learning hub

A learning hub featuring a series of engaging case study-led seminars on the subject of energy is among the highlights of this year's Ecobuild event.

The CPD accredited programme is designed to provide exhibitors and visitors with practical knowhow to perform their jobs better, and the business case to help installers make more informed decisions to address the challenges faced.

The highly thought-provoking programme is hosted by leading industry figures and organisations, with a focus on ways of reducing carbon emissions in buildings and providing low or zero carbon energy power.

The seminars look at everything from 'life after the Green Deal' to delivering efficient and reliable low carbon heat. Among those making their compelling case will be representatives from some of the most powerful and influential voices in the building, engineering and energy sectors, including CIBSE, BRE and Sweett Group.

A tantalising glimpse into the energy of the future is the subject of 'Future energy', an intriguing seminar session chaired by Gavin Thompson, Head of Energy Consulting at BuroHappold Engineering.

Other scheduled sessions include 'Navigating the energy policy maze', chaired by Rob Parnell, Managing Director of Zero Carbon Hub; 'Life after the Green Deal', chaired by BRE Chief Executive Peter Bonfield; 'Improving energy performance in public sector buildings', chaired by Robert Spender, RE:FIT London Programme Director at Greater London Authority, and 'Making renewables work in a subsidy free market', chaired by Barny Evans, Renewable Energy and Sustainability Development at WSP PB.

BEAMA will also be hosting a seminar case study titled 'The Connected Home Demonstrator'. This will turn the spotlight on SMART metering infrastructure for an insightful view on what it might mean for energy consumption.

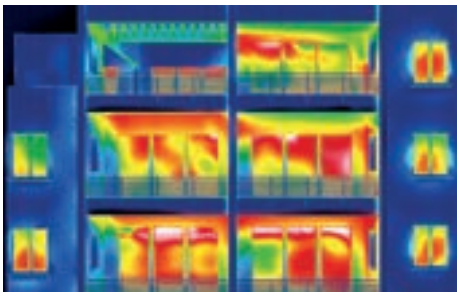
Zero Carbon Hub partners with Ecobuild to boost energy efficient building

As an official supporter of Ecobuild, the Zero Carbon Hub will this year provide delegates with practical advice and guidance to help them understand current building policy and develop energy efficient, comfortable homes.

Established in 2008, the Zero Carbon Hub is a non-profit organisation that works with both Government and industry with a focus on raising build standards, identifying risks, removing barriers to innovation and helping demonstrate energy efficient, new homes.

At Ecobuild the Hub will bring together leading experts and organisations from across Government and the construction industry to give delegates the most up-to-date knowledge on how recent policy changes affect them and their businesses. Organisations that will be supporting Zero Carbon Hub at Ecobuild include Saint-Gobain, CITB, Structural Timber Association, Innovate UK and NHBC. By working in partnership with these bodies, the Zero Carbon Hub hopes to provide a platform for delegates to discover the whole life process of 'better buildings' from design all the way through to products and services, testing and accreditation.

The Hub can be found on stand E7045.



Five chosen for this year's Big Innovation finals

Five pioneering companies behind ingenious products from an air-removing heating device to a water-saving tap fitting have been named as finalists in Ecobuild's Big Innovation Pitch competition, organised in association with Marks & Spencer.

Air2eau, which 'creates water out of thin air'; Actimass Ltd, providers of thermal mass solutions; bespoke facilities management company Skanska Facilities Services; specialist heating efficiency expert Tadpole Energy Ltd; and Waterblade, creators of a water-saving fitting, were chosen as finalists from a 15-strong shortlist.

The companies will now make a final pitch to the Big Innovation Pitch judges, including Chris Marney, Head of Engineering and Energy at M&S, in a special conference session hosted by Rachel Riley from The Gadget Show and Countdown.

The winner has the chance of taking its product innovation further with M&S, with the potential for trial in the retailer's network of UK stores. The Big Innovation Pitch is open to any company operating in the UK sustainable built environment market.

BRE announced as research and innovation partner

For the third consecutive year BRE has been selected as the official research and innovation partner of Ecobuild.

The partnership will see BRE conduct a range of activities at the event including provision of content and speakers for the main conference as well as the CPD accredited learning hubs on Digital Building and the Infrastructure Revolution, powered by ICE (Institution of Civil Engineers).

Director of the BRE Academy Pauline Traetto will take the main stage on Day 3 - Next Generation to share the findings from a recently conducted 'Boardroom to building site' skills survey. The results aim to give the sector a comprehensive picture of the UK's construction skills gap from senior leaders to sub-contractors.

BRE's Home Quality Mark (launched at last year's event) will sponsor Day 1, focused on meeting the challenges around housing, with Gwyn Roberts talking about next generation housing and how it will perform. BIM@BRE (BRE's training and certification programmes around BIM) are sponsors of Day 2 - Architecture.

Global buyers to gather at Ecobuild to offer new export opportunities

UK businesses have a unique opportunity to forge long-lasting and profitable partnerships with buyers and international trade advisors from a host of high-growth, high-spending overseas markets at Ecobuild.

The UKTI Export Hub will host buyers from Brazil, Mexico, Sweden, Finland, India, Russia and the US as well as trade advisers from Canada, Denmark, India, Ireland, New Zealand, Norway, South Africa and the UAE, among others. They are seeking potential UK partners and suppliers for a wide range of major development, infrastructure and sustainable projects worth billions of pounds.

For example, Brazil is looking for new solutions for its infrastructure bottlenecks, especially in smart design, efficient energy in buildings, innovative solutions to improve construction processes and products. Canada is particularly interested in innovations relating to energy efficiency, emissions reductions, architectural and consulting services and green technologies.

UK-based companies will be able to book 1-2-1 meetings with buyers and trade officers, while UKTI officials will be on hand to advise entry level exporters on available opportunities and ways to overcome barriers to exporting.

DISCOVER design winner revealed

A design by students from Bartlett School of Architecture has been selected to create a centrepiece at Ecobuild 2016. The DISCOVER feature stand will be the show's central social hub, spotlighting forward-thinking construction and innovation. It will display shortlisted practices from the BD Architect of the Year Awards as well as sustainability solutions from Ecobuild's Big Innovation Pitch shortlist for 2016.

Ecobuild ran the design competition in conjunction with stand sponsors Medite-SmartPly, leading manufacturers of engineered wood panels, as way of engaging with the next generation of architect. The competition challenged the Bartlett students to create an area which will provide a distinctive oasis within the busy exhibition floor. The aim of the winning design, chosen by a panel of judges, is to maximise the use of sustainable materials including Medite MDF and SmartPly OSB.

Ecobuild links up with The Job Show

In response to an industry-wide skills shortage, Ecobuild has launched a partnership with The Job Show, the nationwide quality recruitment and careers event, to create a construction-focused job show which will run alongside Ecobuild on the last day of the show, March 10.

The Construction Job Show in partnership with Ecobuild has been designed to bring together employers of all sizes and disciplines with the very best would-be employees, and is built on The Job Show's proven track record of uniting talented individuals with fantastic career opportunities, creating connections that benefit both parties.

For construction industry companies, the show gives them the opportunity to recruit their next generation of workers, ensuring they have the manpower – in terms of both capacity and competency – to meet growing, post-recession workloads and address any emerging skills shortages.

Jobseekers will be able to take in a wide variety of potential employment options and take their first steps to a future career.

New focus to lead the 'infrastructure revolution' debate

How we deliver infrastructure that supports economic growth, is resilient to future challenges such as climate change and population growth, and is affordable, are the key issues set to be debated at the Institution of Civil Engineers (ICE) Infrastructure Revolution Hub – a major new conference centre at this year's Ecobuild.

The Infrastructure Revolution Hub is being hosted over the three days. A hard-hitting session entitled 'How world class infrastructure will bring resilience to the economy' starts the programme, chaired by ICE Vice President Keith Clarke, and featuring speakers from GLA and The Airport Operators Association.

Other sessions will debate the future demands of urban infrastructure, how we accommodate demand for energy at the lowest possible environmental cost, and whether there is a place for smaller scale innovations in the supply chain.

A host of major clients will be present within the Infrastructure Revolution Hub, including HS2, Crossrail, The Environment Agency, Anglian Water, Transport for London, Heathrow, Thames Tideway Tunnel and the Cabinet Office Government Construction Team.

ICE Director of Knowledge Nathan Baker said: "The Government has placed infrastructure at the heart of its economic strategy, committing to £100bn investment over the next five years and a pipeline of projects. The opportunity is there, but it comes with a host of challenges – not least population growth, climate change, skills shortages and the need for us to find ways to deliver more for less. In short, our industry needs to transform. Now is the time for us to come together and debate these key issues – and the Infrastructure Revolution Hub provides a fitting centre for this debate."

"Infrastructure is at the true heart of the UK construction industry – it feeds and supports every other discipline," commented Martin Hurn, Ecobuild Event Director.

Rooftop solar now leading the way

Tim Hickman, Technical Manager at EvoEnergy, explains why the recent success of the commercial rooftop solar industry means installers now need to innovate like never before, and reveals how the team behind 2015's biggest rooftop installation recently did just that by putting in place the first rooftop array with central inverters mounted at ground level

Moving into a market that's not primarily driven by subsidy sourced revenue, the commercial rooftop market remains strong with client businesses motivated by energy cost and carbon reductions.

However, with the focus now firmly on the importance of energy and CO2 cuts, customers are rightly demanding that we maximise the potential of their rooftops and open areas like never before. And the bigger the roof, the greater positive impact a solar array can have.

At our recently commissioned Lyreco project in Telford we fitted a centralised inverter system on a roof mounted array for the first time in the UK. String inverters have been the typical choice for roof mounted systems in the past, so we explored this option thoroughly. While there's no right or wrong method, it's a design option for any project of this size.

Firstly, it would have taken more than 100 typical string inverters to process the power from panels covering the 13-acre area; equal in size to seven-and-a-half football pitches. Furthermore, inside the building the topology of the low voltage (LV) system did not lend itself to the additional amount of power we needed to inject, so we refocused our attention onto a high voltage (HV) connection into the client's private 11kV ring main, and this ultimately was a key factor in our decision to go centralised.

We also considered having string inverters on the roof, and there was a suitable space on a north facing wall where the high and low bays intersect. However, having inverters at roof level throws up a couple of logistical issues both during installation and for future maintenance. Although lift equipment and roof access is provided during construction, meaning it's no problem to get equipment where you need it, replacing a 50-150kg inverter in the future is another matter.

It can be just as tricky to get your van near an inverter 20m above ground level. Also string inverters would have

introduced an additional 8.5 tonnes of load to the buildings structure in a fairly concentrated area.

Once we started looking at a HV point of connection then a transformer to step-up the inverters' output voltage would become a necessity. Our attention turned to the packaged substation and inverter possibilities, where our partnership with ABB was helpful in weighing up their solutions, which are already used in solar farms worldwide.

The design began to take shape around the central inverters and roof mounted string combiner boxes, which are serviceable and do not throw up the same logistical problems as roof mounted string inverters. We were able to design a low-loss DC system with combiner boxes in a central rooftop space where the distribution of cables out to the panel strings worked nicely.

A single route for the much larger cabling from the combiner boxes was engineered back to the two 1.56MW central inverters, which were located at ground level alongside the sub-station.

Every project is different and each has its own set of variables to get the engineers thinking, but that's what makes it exciting and why we look forward to coming to work every day!

Lyreco can now say its Telford site is carbon neutral in terms of electricity production and consumption. The panel will generate 3.2MWh annually and save the firm a minimum of £53,000 each year on its energy bills.

Lyreco system in detail

- 3.811MWp rooftop array
- 13,860 Trina Solar 275W panels
- 2 x 1.56MW ABB central inverters
- 23,000sqm coverage, approx 50% for roof lights and shading
- 1,700 tonnes of CO2 saved per year (estimated)
- Minimum of £53k annual saving on energy bills (estimated)

Tim Hickman is Technical Manager for leading solar PV installers EvoEnergy

Wind turbine for bird charity

RSPB and Ecotricity to build on green energy partnership

RSPB and green energy company Ecotricity have started work to install a wind turbine at the nature conservation charity's headquarters in Sandy, Beds.

The 100m-tall wind turbine will generate around two million units of green energy every year, equivalent to over half of the electricity the RSPB uses across its 127 UK locations.

With this one wind turbine, Europe's largest nature conservation charity will reduce carbon emissions by up to 800 tonnes every year.

The new turbine is the latest development in a growing portfolio of RSPB projects that are making the charity more energy efficient and greener. The RSPB has aligned its carbon emissions reduction ambitions with the 2008 Climate Change Act, which includes a legal duty for 80 percent reduction of greenhouse gas emissions by 2050.

Martin Harper, RSPB's Director of Conservation, said: "Using wind energy is a proven and reliable technology that reduces greenhouse gas emissions. But turbines must be located where they are sympathetic to our natural environment.

"The RSPB has been involved in over 1,500 wind farm applications, offering our expertise and advice to local authorities, landowners and energy companies. This ensures that local nesting activity, migratory patterns and flight paths are all taken into account when planning a new wind turbine."

Work to start on pioneering energy plant

World-first bio plant for handling domestic waste to be built in UK

A world first bio plant for handling unsorted household waste will be built in Northwich, Cheshire by DONG Energy.

It will be the first bio plant in the world to handle unsorted household waste, without prior treatment, using enzymes. The ground-breaking new technology, called REnescience, has been developed by DONG Energy and tested at a demonstration plant in Copenhagen since 2009.

Now the world's first commercial full-scale plant will be built in Northwich, meaning a much larger proportion of UK household waste can be recycled and converted into biogas energy. DONG Energy will finance, build and operate the plant, which will be operational in 2017. Around 150 people will be involved during the peak phase of construction, with an average of 75 at any given time. The plant will also require around 24 full-time local employees to operate it.

The REnescience plant in Northwich will be able to receive unsorted household waste, which – through enzyme treatment – will be converted into biogas as well as recyclable plastics and metals. The biogas is converted to green power via gas engines.

The plant will have an annual capacity of 120,000 tonnes of waste, which is equivalent to the waste from almost 110,000 UK households.

The design and planning of the plant has been completed, and the site has been awarded planning permission. DONG Energy expects construction work to begin in February 2016, with the plant being commissioned in early 2017.

New solar farms boost green generation

OPDE completes construction of three new solar farms

The multinational firm OPDE, which specialises in the development, construction and operation of photovoltaic farms, has completed the construction of three new PV plants located in England. The new installations will reach a combined power of 15MW with an electrical generation sufficient to power 6,000 homes.

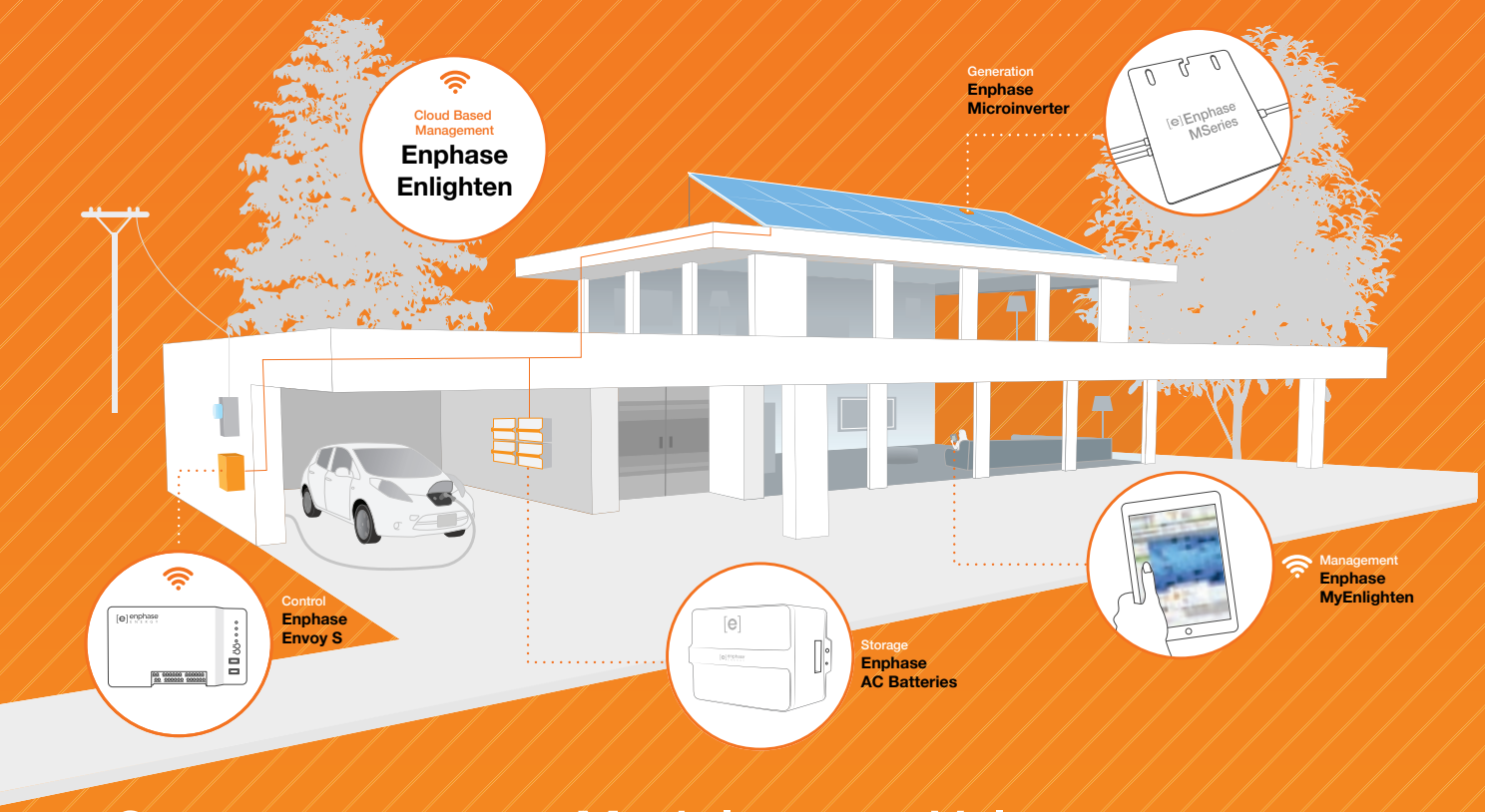
The new solar farms are located near the towns of Colston Bassett, Nottinghamshire, Crewkerne, Somerset, and in Iwade near Sittingbourne, Kent. The three solar farms have been successfully connected to the grid and are now fully operational.

The completion of these three new projects has been achieved only a few weeks after obtaining planning consent for two further solar farms of 5MWp each located near Lancaster and Leicester. Furthermore, OPDE has recently completed the construction of a 250kwp solar rooftop in Hempstead, Kent.

The Spanish-based group highlighted that the completion of these projects confirms the company's commitment to the UK market.

The Future **is now**

The Enphase Energy Management System integrates solar energy, storage and load management into one smart and scalable solution.



Smart

- Common monitoring platform
- Integrates with leading manufacturers
- Intelligent Control System

Modular

- Scalable
- Maximum utilisation roof space
- Rapid installation

Value

- Maximise production and self-consumption
- Lower operational and maintenance costs
- Low kilowatt/hour price
- 20 year microinverter warranty

Enphase Energy Management System Components

Envoy-S

Monitors and controls generation, consumption and storage to optimize energy utilisation

Enphase Microinverter

Higher production and greater efficiency

Enphase Enlighten

Software provides remote visibility, control and intelligence for every system.

Engage cable system

Plug-and-Play-cabling

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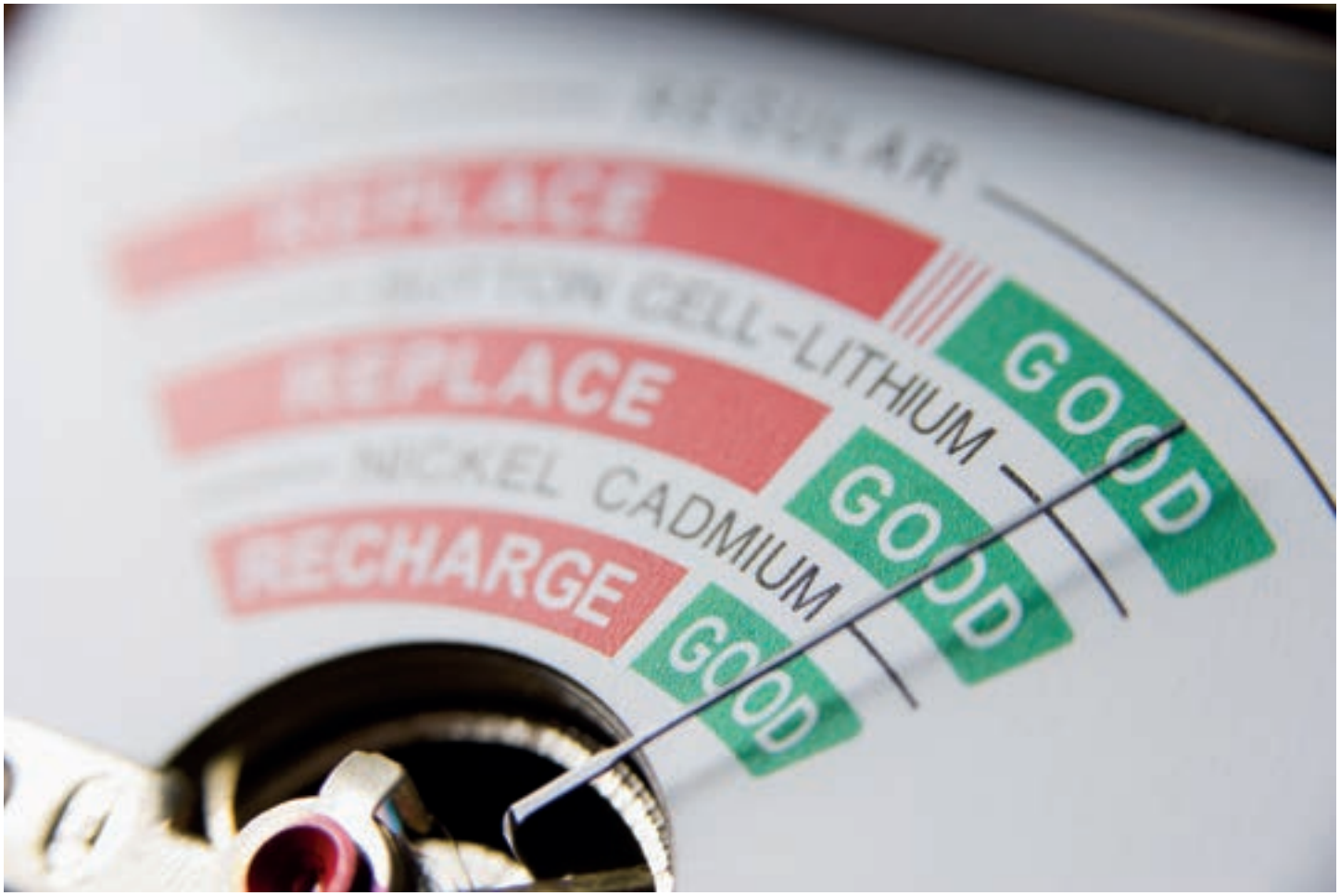


REA predicts boom year for energy storage as it comes into spotlight

More installers are looking to energy solution systems to add to their offering

The REA predicts 2016 will be a key year in the development of the energy storage market as new research reveals more installers are looking to offer storage solutions in their portfolio.

The news follows the announcement that leading company Renewable Energy Systems (RES) has signed a milestone deal to build and support its first UK battery energy storage system (BESS). The deal represents one of the first energy storage projects in the UK to be delivered under a fully-wrapped Engineering, Procurement and Construction (EPC) contract.

Despite only a small number of British PV installers already installing energy storage, compared to last year, more are now considering adding storage solutions to their portfolio, according to a current study by market researcher EuPD Research.

For the eighth successive year, EuPD Research is compiling the study 'European PV InstallerMonitor', which surveyed installers of PV systems about several relevant topics.

The 'European PV InstallerMonitor 2015/2016 indicates only 12 percent of the survey participants already offer energy storage solutions, just 1 percent more than the previous year. However, whereas only 42 percent were considering energy storage in last year's study, more than half (53 percent) want to include energy storage in their portfolio in 2016.

This demonstrates that energy storage in the UK still offers a high potential.

SMA is not only the most used energy storage brand, but also the best known. Tesla, though, achieved an overwhelming second place in regard to brand awareness, which is all the more surprising as its products were not yet available in the UK at the time of the survey. Due to lack of experience most British installers still have concerns about energy storage, with high prices and thus low margins most often mentioned.

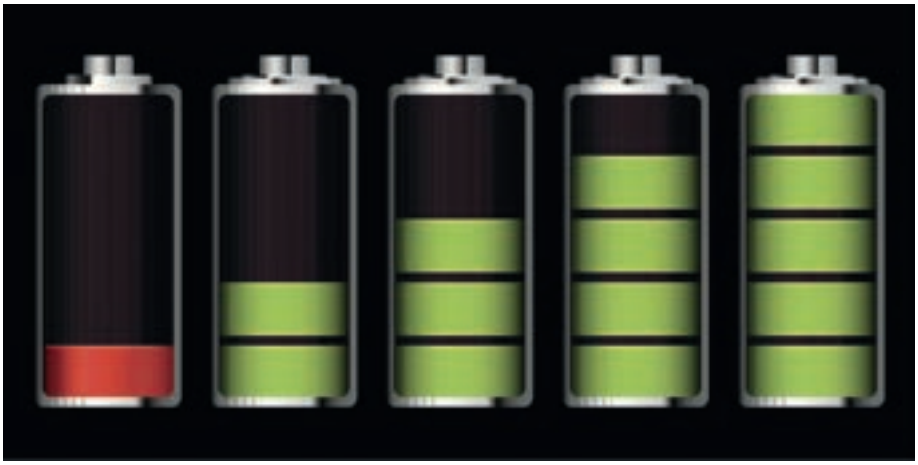
Apart from topics such as energy storage, the study features issues such as procurement management, market penetration, brand management, satisfaction and

recommendation. The study does not focus on the UK solely, but is also available for the PV markets in Germany, France, Italy and the Netherlands. A total of 650 European PV installers were surveyed for the eighth edition.

The shift towards energy storage systems was highlighted when RES, a global renewable energy company headquartered in the UK, which has pioneered energy storage projects in the US and Canada, signed an EPC contract with Western Power Distribution (WPD) for a project that will demonstrate nine different applications of energy storage on the grid.

It will be installed alongside a British Solar Renewables Ltd (BSR) solar park south of Glastonbury, in Somerset. The energy storage project, which will be RES's tenth globally, will see its total energy storage construction portfolio reach 78MW/48MWh and will build on RES's growth in the global energy storage sector.

The centrepiece of the WPD initiative is the 300kVA/640kWh battery energy storage system being installed by RES, who will provide ongoing warranty support during the battery's operation. RES will utilise RESolve, its energy storage control and dispatch system to provide 24/7 management of the battery's operation. The BESS will be supplied



by BYD and will be fully self-contained including hundreds of individual battery cells, power conversion equipment and safety and monitoring systems.

Gordon MacDougall, RES Managing Director for Western Europe, said: "This project marks an important milestone for RES, as we are bringing the energy storage expertise we've developed in North America to the UK for the very first time.

"Our experience of delivering almost 80MW of energy storage globally has given us the ability to provide proven and reliable energy storage solutions, and we are confident that this project will open the door for other opportunities in the UK."

The system will be embedded at a 1.5MW solar park at Copley Wood near Butleigh, Somerset, and connected to WPD's South West 11kV network. The project is the first of its kind to explore the provision of ancillary services to a distribution network operator (DNO) from an embedded battery energy storage system. The project is being delivered through Ofgem's Network Innovation Allowance, and run in conjunction with BSR and the National Solar Centre.

The project is part of a major initiative being run by WPD, the electricity distributor for the Midlands, the South West and South Wales, to investigate the technical and commercial feasibility of battery energy storage combined within distributed generation (DG) installations in the UK.

Using energy storage in this way offers huge potential to increase the efficiency and cost-effectiveness of grid operations without the need for public or Government subsidy. It also has the potential to improve access to the grid to the low carbon technologies that will play an essential role in the UK's transition to a low carbon future at the lowest possible cost to consumers.

That the UK is poised for considerable growth in the energy storage market in 2016 demonstrates how investing in renewables can support new economic growth in innovative new industries.

The REA's most recent research indicates that there are presently 27 major energy storage projects that are planned and operational in the UK, with many more planned for 2016. Despite this, Government policy uncertainty remains,

particularly around what role the National Infrastructure Commission will fill to assist future growth, or what actions DECC, Ofgem or HM Treasury will take to ensure a clear, stable, and joined-up policy regime.

REA CEO Dr Nina Skorupska CBE said: "2016 will be the year in which battery storage takes off in the UK, as we have seen in the United States, Germany and Japan, who have all moved quickly to reap the benefits of this technology – including energy security, greater renewables integration and more green jobs.

"The cost of more efficient batteries is rapidly declining. Now the greatest barrier to growth is policy, and we look to the National Infrastructure Commission, the Department for Energy and Climate Change, and HM Treasury particularly to see the serious potential in this area, as well as in other forms of energy storage.

"As members of the REA's policy group, UK Energy Storage, RES and BSR are working to swiftly place the UK as a global leader in this industry. This can be done if the Government creates more clear definitions, standardises processes, and maintains a stable framework."

In a new report, industry body Scottish Renewables claims energy storage should be one of six key areas for £500m of Government innovation spending. The organisation's study identified six key innovation areas, and called on the UK Government to work with industry to help guide investment to deliver a low-carbon, low-cost energy sector.

Hannah Smith, Policy Officer at Scottish Renewables, said: "The UK Government's commitment to double the spend on energy innovation to £500m over five years has the

potential to drive dramatic advances in our energy system.

"Scottish Renewables' new paper highlights the importance of the strategic allocation of these funds, and identifies six technology areas that have real potential to benefit from this funding, propelling British business to the forefront of a truly world-leading, next-generation energy system."

Scottish Renewables, which is calling for half of all energy used in Scotland to come from renewables by 2030, published the new report to examine the future of our energy system across electricity, heat and transport.

The priority areas identified within the study are:

- Wave and tidal energy – at which the UK already leads the world, with facilities like the European Marine Energy Centre in Orkney providing cutting-edge test opportunities
- Storage technologies – which can enable increased renewables capacity (by storing electricity at times of low demand) and provide a multitude of services to the management of our electricity system, as well as empowering communities and consumers
- Floating offshore wind – which could open huge areas of the world's deepest oceans to green energy generation. The UK is eyeing a global lead already, and funds invested in innovation could cement that advantage
- Low carbon heat – which accounts for 46 percent of UK energy demand, but of which only 4.9 percent was renewable in 2014. Decarbonising the sector will mean fully developing new technologies, supporting their large-scale deployment and integrating them into our wider energy system.
- Systems integration – thinking about our heat, transport and electricity sectors as one system will allow us to be 'smarter' in the way we use power and drive efficiencies, increase security and reduce costs
- Flexible networks – could, according to the Committee on Climate Change (CCC), help save consumers up to £3.5bn per year. Securing the technology to deliver what the CCC calls "a more flexible power system" will require a range of technologies such as Active Network Management, demand-side response, storage and increased interconnection, all of which are yet to be fully developed.

Scottish Renewables' Hannah Smith added: "Our renewable energy industry has come a long way since the first hydropower and wind projects of the 19th Century, due in no small part to the impressive list of technical and engineering innovations coming out of the UK.

"We welcome the Chancellor's recent commitment to continue this by doubling DECC's innovation programme budget. We believe developing an Energy Innovation Strategy to guide this investment would get the most out of every pound spent.

"Government is in a unique position to mobilise a variety of resources and agencies, creating the right landscape for innovation to occur. This would lay the foundations for British businesses developing innovative products and services to flourish.

"Our world lead in tidal technology, for example, owes much to the continued development of onshore wind, with technology for the former deriving from decades of study into the latter.

"Now new technologies like wave energy and storage have the potential to revolutionise the way we produce energy."

Figure it out

REI 10 – Share performance of UK's leading green energy companies

	52 week high	52 week low	January price	February price	
Drax Group (DRX)	451.30	205.60	220.10	234.50	▲
Good Energy Group	255.13	200.00	204.00	186.10	▼
Intelligent Energy	151.50	30.75	75.36	43.00	▼
ITM Power	36.45	14.75	20.23	15.00	▼
Leaf Clean Energy	43.00	22.00	36.80	36.78	▼
PV Crystalox Solar	13.00	7.78	8.50	9.00	▲
Rame energy	11.00	5.75	9.60	9.50	▼
REACT Energy	9.00	2.00	3.45	2.10	▼
Renewable Energy Holdings	2.69	0.70		Suspended	
Rurelec	4.60	0.50	0.949	1.20	▲

Number of MCS registered installers per technology

Technology type	Cumulative number	Registered Jan 16
Solar PV	2385	35
Biomass	336	7
Air source heat pump	747	6
Ground source heat pump	566	1
Solar thermal	793	3
Small wind	69	0
Total	2209	52

Number of MCS registered installations per technology

Technology type	Cumulative number	Installed Jan 16
Solar PV	833,506	26,247
Biomass	15,984	513
Air source heat pump	43,085	570
Ground source heat pump	11,640	135
Solar thermal	8,213	52
Small wind	4,950	16
Total	917,378	27,533

(Figures supplied by Gemserv)

Feed-in Tariff
Distribution of FiT installations by technology

Technology	Type
Anerobic Digestion	48
Hydro	337
Micro CHP	405
Solar PV	345,471
Wind	3,739

(Source: Ofgem)

Generation tariffs for non PV technologies

Technology	Band (kW)	Tariffs (p/kWh)
Hydro	< 100kW	8.54
	100 - 500kW	6.14
	500 - 2000kW	6.14
	> 2000kW	4.43
Wind	< 50kW	8.54
	50 - 100kW	8.54
	100 - 1500kW	5.46
	> 1500kW	0.86

(Source: OFGEM)

Generation tariffs for solar PV

Tariff band	FiT rate (p/kWh) from 01/01/16
< 10kW	4.39
10 - 50kW	4.59
150 - 250kW	2.70
250 - 1000kW	2.27
> 1000kW	0.87
Standalone	0.87

* Currently subject to consultation

Cost comparison of heating fuels (not including RHI payments)

Fuel source	kWh provided per unit of fuel	Efficiency of system (%)	Units consumed by house (kWh)	Price per unit of fuel (£)	Units consumed per annum	Cost per annum
Heating oil (kerosene)	10 per litre	90	25300	0.31 per litre	2530 litres	£784
Wood pellets	4800 per tonne	94	24300	256 per tonne	5 tonnes	£1,280
Natural gas	1 per kWh	90	25300	0.04 per kWh	25300 kWh	£1,012
LPG	6.6 per litre	90	25300	0.38 per litre	3833 litres	£1,457
Electricity	1 per kWh	100	23000	0.14 per kWh	23000 kWh	£3,220
*Air source heat pump	1 per kWh	290	7931	0.14 per kWh	7931kWh	£1,110
*Ground source heat pump	1 per kWh	360	6389	0.14 per kWh	6389kWh	£894
Dual mode system 1						
Oil boiler (30% of heat load)	10 per litre	90	7590	0.31 per litre	759 litres	£235
*Air source heat pump (70% of heat load)	1 per kWh	290	5552	0.14 per kWh	5552 kWh	£777
Dual mode system 2						
Gas boiler (30% of heat load)	1 per kWh	90	7590	0.04 per kWh	7590 kWh	£304
*Air source heat pump (70% of heat load)	1 per kWh	290	5552	0.14 per kWh	5552 kWh	£777

Based on 23,000kWh needed to meet typical household's heating and hot water needs per annum. Prices and costs are indicative only and may vary.
*Calculations based on continuous operation at maximum efficiency. Fuel costs taken from Nottingham Energy Partnership and other sources.

RHI non-domestic rates

Tariff name	Eligible technology	Eligible sizes	Tariff rate (pence/kWh)	Tariff duration
Small biomass	Solid biomass: Municipal solid waste (inc CHP)	Less than 200 kWth	Tier 1: 3.76 Tier 2: 1.	20
Medium biomass	Solid biomass: Municipal solid waste (inc CHP)	200 kWth and above, less than 100 kWth	Tier 1: 5.18 Tier 2: 2.24	20
Large biomass	Solid biomass: Municipal solid waste (inc CHP)	1000 kWth and above	2.03	20
Small ground source	Ground source heat pumps, water-source heat pumps, deep geothermal	Less than 100 kWth	Tier 1: 8.84 Tier 2: 2.64	20
Deep geothermal			5.08	
Solar thermal	Solar thermal	Less than 200 kWth	10.16	20
Air source heat pumps	ASHPs	All	2.54	20

(Source: OFGEM)

Domestic RHI deployment

Technology	Accreditations (Apr 14–Oct 15)	% of total
ASHP	18887	44
GSHP	6223	14
Biomass	10832	25
Solar thermal	7260	17
TOTAL	43202	100

(Source: DECC)

Domestic RHI tariffs

Technology	RHI rate (p/kWh)
ASHP	7.42
Biomass boilers	5.14
GSHP	19.10
Solar thermal	19.51

(Source: DECC)

Two minutes with . . .

Who are you?
Dr Philip Gray,
Technical Manager for Kilfrost Speciality Fluids.

What do you do?
My role is highly varied. The majority of my time is either spent managing technical enquiries from our customers or working on new innovations. In addition, I work closely with our quality, regulatory, lab scientists and production teams to ensure that we maintain the high standards and pioneering spirit that Kilfrost demands and has based its business on for over 80 years.

Where are you?
In the centre of Britain in Haltwhistle, a stone's throw from Hadrian's Wall.

How's business at the moment?
One word – exciting! We have just launched two game-changing products, one of which, Kilfrost GEO, is set to finally settle the monoethylene glycol (MEG) versus monopropylene glycol (MPG) debate with respect to inhibited thermal fluids for ground and water source heat pumps. It removes the need for compromise between optimum efficiency and low toxicity, which installers have had to battle against until now.

How could business be better?
I think business would be better for everyone in the industry if we all communicated with each other more. Anything, whether it be a spaceship or a ham sandwich, is the sum of its parts. Everyone's contributions will have an impact on the overall operational efficiency, system longevity and reputation of renewable technologies. If everyone communicated and worked together, business would be better across the board and all our customers would benefit.

Who do you admire in renewables?
Aside from the obvious benefit of the technologies themselves and the positive implications for the health of our environment and economy, the industry is packed full of passionate people and it's a pleasure to be a part of it.

What's the best business advice you've ever received?
Simply to listen. The key to innovation is listening. Understand the industries' needs and the rest is simple. If you don't listen you will merely reinvent the wheel and nobody moves forwards.

CURRENT AFFAIRS

Bill Wright, head of energy solutions at the ECA, analyses potential of energy storage

I suspect that few would have thought a year ago that oil prices would drop to around $30/barrel. For many years it seemed that the only way was up, but instead, oversupply and diminishing demand have forced the price down. It's clear that the global trajectory for energy is away from fossil fuel towards renewables, but this certainly won't happen immediately overnight.

So where do low oil prices leave the Renewable Energy industry? Obviously the low oil price and the reduction in Feed-in Tariffs is leaving some parts of the UK's renewable industry with real difficulties. However, all is far from lost. Commercially, PV is still viable as all power can be used during the generating hours - but, in the domestic market, this is less so - unless all the energy can be stored and used when required.

A revolution is coming in energy storage which will have a profound, beneficial effect on the renewable energy industry. Tesla and other manufacturers are looking to produce batteries at economic prices that are suitable for storage of PV energy. This will enable the variable energy supplies from renewable sources - such as PV and wind - to be stored when not producing directly used power, with the stored energy used at times of low production.

This development will not only help the consumer but help the overall efficiency of the power distribution system, as the vagaries and problems associated with renewable energy will be solved if there is sufficient storage capacity available. The result? A win-win situation - and companies are already working on grid-scale storage systems which can only help the renewable energy industry. We should all welcome this new revolution as a partner in our aim to move away from fossil fuels and closer to more renewable energy sources.

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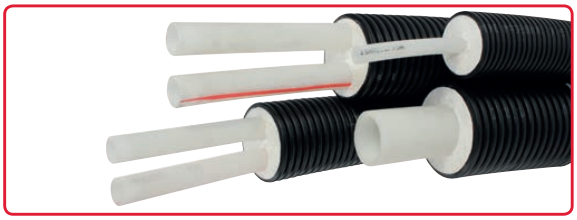

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ELECTRIC VEHICLES

What: Firm of architects installs EV charging points to power up hybrids

How: Installation of Rolec twin electric vehicle charging socket (32 amp, single phase)

Result: Greener company car fleet

Firm taps into the EV revolution

Installing the right charging solution in the workplace

Shipston-on-Stour based architects Hayward Smart turned to Stratford Energy Solutions for the most suitable charging solution when they purchased two Audi E-Tron plug-in hybrids to add to the company fleet.

The Warwickshire energy firm had a number of factors to consider, many of which are common across all businesses looking to install one or more charge points.

Hayward Smart has its own private car park, but access to the charge points would have to be controlled for the use of employees only.

The second consideration was how the vehicles would be used. The two plug-in hybrid vehicles were sometimes used during the day for travelling to meetings, so keeping the battery fully charged was important.

After working closely with Rexel, Stratford Energy Solutions recommended the installation of a Rolec twin electric vehicle charging socket (32 amp, single phase). They also undertook all of the required groundworks, which included laying approximately 10 metres of armoured cable from the building to the car park.

This solution allows both vehiclese to be charged simultaneously and the key switch provides a very simple and cost effective means of access control.

Stratford Energy Solutions also installed Rolec units with tethered leads (32 amp, single phase) at the employees' own homes, giving them the convenience and speed of being able to "pull up and plug in" straight away. The unit also qualified for OLEV grant funding.

HYDRO

What: Highlands communities to cash in on local hydro-electric plans

How: ÖkoFEN wood pellet boiler

Result: Communities to receive £5,000 per MW installed

Hydro firm commits to new investment

Communities to receive windfall cash from energy plants

Perth hydro firm Green Highland Renewables has started preparation work on a significant new hydro scheme at Loch Eilde Mor, in the hills above Kinlochleven.

The £13.6m project, which lies on the Rio Tinto estate, is fully funded by the hydro firm's owners Ancala Renewables and is one of a number of projects the firm is looking to develop across the Highlands.

"This is a really exciting project and marks the start of an extremely busy two years for our firm," says Green Highland Renewables Chief Executive Officer Mark Mathieson.

"In the last four years we have constructed and commissioned 25 schemes totalling 17MW across the Highlands and in the process have invested £62m – the majority of this going to local construction firms and contractors.

"Add to this the £25m we have committed so far to new schemes this year, and it is clear our hydro projects will make a significant positive impact on the Highland economy. We have well over a dozen active schemes in our build pipeline with further investment to come, and the nature of our projects means the majority of expenditure goes on civil engineering, much of which is carried out by local firms.

"All of these schemes have secured a Feed-in Tariff from the UK Government, and the only sad note is that with the recent cuts to hydro tariffs we will see next to zero new Highland schemes come forward for construction from 2018 onwards. It will be the end of an era."

SOLAR PV

What: University installs PV panels in record time

How: 663 PV panels on rooftop array

Result: Completed in time to qualify for the higher rate of Feed-in Tariff

Race against time

University scrambles to beat tariff reduction deadline

The University of Brighton has installed 663 new solar panels that will reduce its carbon emissions by more than 82 tonnes – the equivalent of 37 UK households' annual electricity consumption.

The £200,000 installation, at its campus in Falmer, puts it among the top universities in the UK for on-site renewable energy.

The panels, on the roofs of Westlain House, Mayfield House and Falmer Library, are expected to meet 7.5 percent of Falmer's electricity demand, generating over 173,000 kWh of clean, renewable electricity a year.

The installation was completed in record time to benefit from a higher 'Feed-in Tariff' subsidy – the Government initiative which provided a financial incentive for electricity produced from renewable sources, but which has been cut by 70 percent for solar PV arrays installed after 15 January.

To safeguard an additional £200,000 income for the university over the next 20 years, the PV installation was brought forward following the announcements of the cuts, and swiftly completed before the feed-in tariff deadline.

Members of the university's Environment Team and Ecosphere Renewables, a local Sussex company, worked flat out over the Christmas break to complete the installation within just three weeks of the contract award date.

Abigail Dombey, the university's Environmental Manager, said: "The installation is a clear demonstration of the university's commitment to reduce carbon emissions, ensure energy security and to promote sustainability."

SOLAR PV

What: Solar installation generates extra revenue for University

How: 110Kw panels mounted on sports centre rooftop

Result: Annual CO2 savings of 40 tonnes

Solar panel investment

University upgrades PV system to generate more savings

Northumbria University has taken significant steps to increase its use of solar energy to help reduce its carbon emissions.

The University has just completed an investment in one of the largest installations of solar panels in Newcastle on the roof of its Sport Central facility, and has also refurbished existing panels on Northumberland Building, which was the first in the UK to be fitted with a solar façade in 1995.

The huge installation of 110kW panels on Sport Central's roof will save the University over 40 tonnes of carbon dioxide emissions (CO2) per year and £9,000 costs in electricity charges - the equivalent to the emissions made by 10 houses.

The panels will generate so much power that they will also provide the University with an income of around £8,500 per year by selling surplus electricity back to the National Grid through the Government's Feed-In Tariff scheme,.

After being in use for two decades, the 40kW panels on Northumberland Building have also been fully cleaned and repaired to ensure they will continue to provide the University with electricity for another 20 years. The panels currently save the University around 11 tonnes of CO2 per year.

The panels form part of the University's ambitious carbon management plan, which aims to reduce carbon emissions by 32.5 percent from their level in 2005 by the year 2020. The University is currently assessing the viability of installing a 150kW solar PV array at its Coach Lane Campus, which, if viable, will save a further 60 tonnes of CO2 annually.

My working week

Who are you? Bruce Allen, CEO of HETAS

What do you do? Bruce heads up HETAS, the official body recognised by Government to approve biomass and solid fuel heating appliances, fuels and services, including the registration of competent installers and servicing businesses

Bruce Allen spends most of his week looking at ways to best support the industry

Helping the installer look to the future

Monday

As HETAS CEO, an important part of my role is to think hard about the needs of our registered installers and ensure their voices are heard at HETAS and in the wider industry. Our technical helpline has received a number of enquiries from registered installers revealing discrepancies across England and Wales regarding a particular safety matter with chimneys. This has become a matter of interest to Regulators and to LABC (the Local Authority Building Control Organisation) at a national level, so I write to the Government Department and to LABC seeking clarification.

Some of the latest, more innovative products require the technical team to think about new standards, safety rules and regulations. This afternoon, I work with our training manager to ensure that the complex information around these products can be turned into policy for HETAS. We then revise the policy into a guide for installers in a way that is clear, concise and useful to them.

On the other side of things we work closely with the Stove Industry Alliance (SIA) who are a trade association for stove manufacturers and it is equally important to think about the links between manufacturers and HETAS and how great installers can fit great appliances for the benefit of solid fuel customers and users.

Tuesday

We have been looking at a new Customer Relationship Management (CRM) system to utilise across HETAS to deal with a growing number of consumer enquiries. We are at the stage of evaluating proposals, costs and utility, so I am working with our accounts department and project manager to ensure we get a solution that meets our needs now, and is sustainable for the future.

As we approach year end, we are business planning and forming budgets which means working with different departments to understand their challenges and aspirations for the coming year. We have secured some Government support through a programme called Business Growth, so I am working with HETAS' senior management team and a consultant to incorporate this into our plans.

To end the day, I read management reports ready for Wednesday's management meeting.

Wednesday

Most of the day is taken up with the weekly management meeting in which attendees report on activities and achievements.

We also take a look at the monthly financial report to gives us a better indication of our end of year position. While we are all excited to be planning for the year ahead, this encourages the management team to focus on the current year's targets.

Thursday

Giving yourself space and time to think is essential for strategic planning. Following yesterday's management meeting and discussions around the Business Growth programme, now is the time to think about strategy so I lock myself away in my office.

There is so much going on in Europe with plans for a more renewable, low carbon future that we have to keep up to date with; we are constantly reviewing the latest initiatives and legislation to ensure that this correlates with our directives, regulations and standards. With the EcoDesign legislation for solid fuel, wood and biomass appliances ready for implementation in 2022, we have to plan a way through the next seven years of standards development.

We must work with our industry to ensure that all parties understand the progress towards that date – this sort of work requires consultation. I spend the afternoon carrying out research for the papers.

Friday

In the morning, the senior management team and I have a meeting with the Business Growth consultant looking what we can do to improve the business and to provide an enhanced service to stakeholders. While we are a not-for-profit organisation, we are still an enterprise, so performance, value for money and service standards are as important to us as to any business.

We find that Friday afternoon is a time that our registered installers are most likely to open emails and text messages, so we will often send important messages out then. I review this content and then head to our breakout area where we often hold charity fundraisers for 'dress down Friday'. Today's is a cake sale so I treat myself to a slice of Victoria sponge to round off a hard-working week!

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Goodwe installer training

Thurs **18th Feb 2016**
Weds **16th March 2016**

Waxman Energy will be hosting two Goodwe installer training days at its HQ in Elland, West Yorkshire to offer technical and sales training on Goodwe battery storage products. For more information or to reserve a place please contact us.

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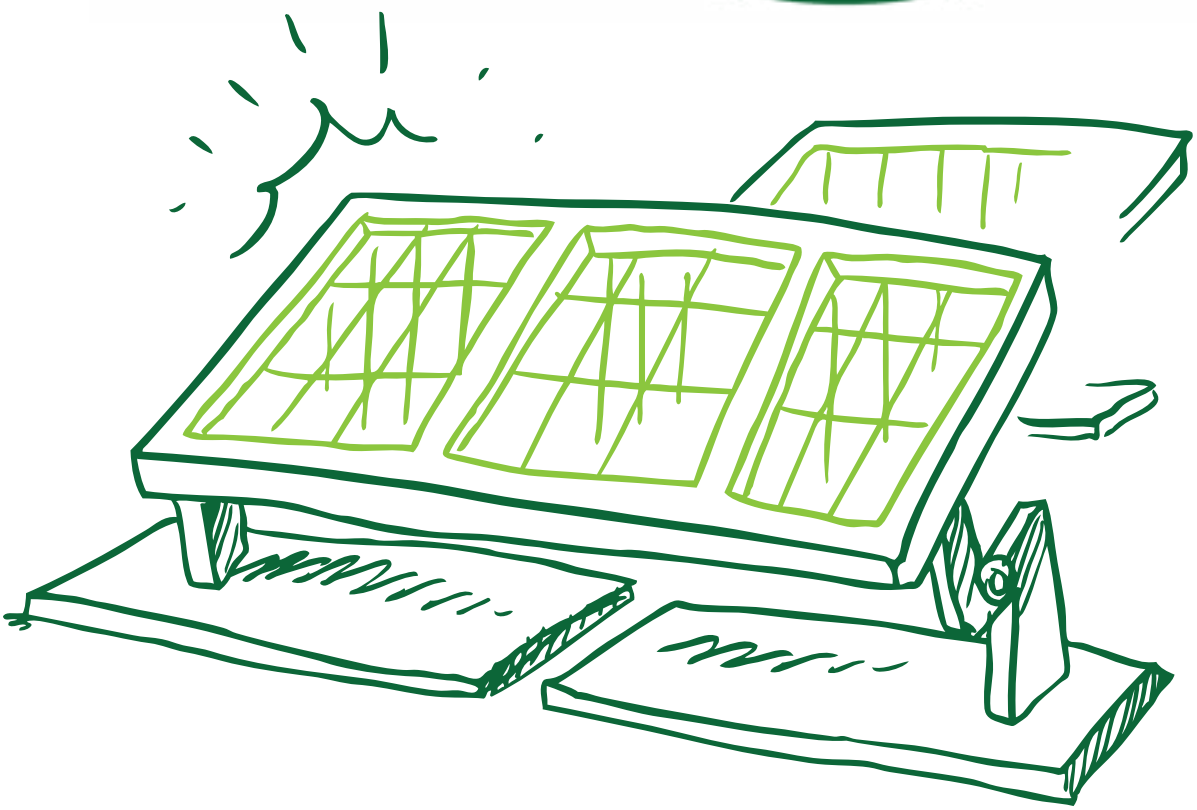

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