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Whitehall reshuffle

So the end of DECC has been confirmed and the renewable energy industry is looking for indicators that a period of consistent policy support will return.

Within weeks of the Whitehall shake-up the signs look good for the renewables market. Nearly two months have passed with no sign of subsidy-cutting consultations, planning permission bids for windfarm are being granted and Theresa May orders more time to re-think the Hinkley Point nuclear project.

The CV of the Cabinet Secretary now in charge of the energy portfolio, Greg Clarke, appears to be positive for the renewables industry, especially as his decision-making is free from the meddling constraints of former Chancellor George Osborne and the anti-green energy lobbying from the likes of former Energy Minister Andrea Leadsom.

An one analyst describes, Clark sees economic growth and tackling climate change as bedfellows not opponents – and he "now has the opportunity to align British industry, energy and climate policy in a way that's never been done before".

Delays to key renewable projects such as Swansea Bay Tidal Lagoon are causing investors unease, so a period of political consistency would now be greatly welcomed by the entire industry, especially with the unknown implications of Brexit.

With the installer community looking forward to a new dawn of energy storage technology and all the advantages the sector will open up, the signs are looking positive.

In last month's edition we incorrectly mentioned Go Geotherm had installed a ground source heat pump in our Case Study section, we're happy to clarify that the company supplied the technology.

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60th anniversary for NICEIC

Last month marked an important milestone for NICEIC as it celebrated its 60th anniversary.

The UK's leading voluntary body for electrical contractors was officially incorporated on 10 August 1956. The National Inspection Council for Electrical Installation Contracting, as it was first known, started out with 3,500 contractors on its roll.

Today it has more than 19 000 approved contractors and an additional 9,000 domestic installers – making it the UK's largest and most recognised volutary body within the electrical industry.

"The 60th anniversary marks a significant milestone in the history of NICEC," said current CEO of NICEIC, Emma Clancy. "Much has changed within the industry during the last six decades but the values of safety and competence remain at the core of everything we do.

"More and more businesses now turn to NICEIC for accreditation – firms who have voluntarily chosen to have their work assessed on an annual basis. They provide the appropriate insurances and customer protection policies, and have a detailed record of their work through the certification and notification process.

"This has to be a good thing, not only for the industry but consumers too, and we will keep working hard to continue to improve and meet our customers' needs today and tomorrow."

NICEIC was created in a post-war era when there was a lack of uniform standards for wiring and there was no regulation of anyone carrying out electrical work. Although the first edition of the wiring regulations was produced way back in 1882 there was little control over the guidance being implemented.

In 1923 The National Register of Electrical Installation Contractors (NREIC) was set up to help the public identify competent contractors – although many of the contractors around at the time were not obliged to sign up.

It would be another 33 years before NICEIC was set up as the first voluntary body and although much has changed, the principles remain the same – to keep a roll of approved contractors, to carry out inspections of their work, and to inform the public about the dangers of unsafe installations.

European installers remain in favour of EU stance on Chinese PV imports

A survey of more than 500 companies across all 28 EU member states reveals that the majority of solar installers favour extending the anti-dumping and anti-subsidy duties introduced two years ago if the EU Commission´s investigations establish that Chinese producers still violate international trade law.

The poll found that most installers believe the cuts to the Feed-in Tariff cuts, and not the duties, are responsible for the EU market´s decline in recent years.

Almost 90 percent emphasise the importance of European products in competition. The telephone-based survey on behalf of the European solar producer initiative EU ProSun was conducted by Europressedienst in May and June 2016.

Milan Nitzschke, president of EU ProSun, said: "We wanted to clarify whether the assertion made by the lobby organisation of big Chinese producers and their importers is valid, that the European solar installers prefer a termination of the measures against Chinese solar dumping. The opposite is the case.

"The clear majority supports an extension of the duties and minimum import prices (MIPs), which makes sense because they do not feel the measures have negatively affected their business. The enterprises apparently recognise the need for fair competition from their own experiences. No one wants to get pushed out of the market by unfair means.

"This same principle also has to apply for the benefit of the producing solar industry, in the interest of product variety, quality and research and development."

Major milestone passed by installer training academy

Leading UK renewable heating firm INNASOL has trained more that 2,500 sector specialists at its dedicated training academy in Essex.

The milestone came following a week of fully booked training modules on ETA biomass and IDM heat-pump technology. There are now over 2,500 fully equipped and certified ETA and IDM heating engineers around the UK and Ireland helping home and business owners make the transition from fossil fuel to clean, sustainable heating technologies.

Silvio Spiess, Innasol CEO, said: "I have always had a strong belief in our partner network and what it stands for and I am elated that it's clear things are now on the way up. Together with other key players, the Innasol partner network continues to drive our industry forward but there is still a long way to go to develop the skills, a professional environment and, most of all, change people's thinking and awareness."

Training modules cover everything from product knowledge to hands-on service, maintenance and aftercare. Courses at the Innasol Academy are available to the Innasol partner network and the professional public.

Solarcentury achieves MCS 012 certification first with BRE Global

Solarcentury has achieved a certification first under the new MCS 012 requirements for roof-integrated photovoltaic (PV) systems.

Solarcentury has certified its Sunstation, a new sleek, black roof solar system. First to install Sunstation is respected British designer and TV presenter Wayne Hemingway, whose house is now being powered by solar electricity generated by the system.

"The update to MCS 012 is an important development for solar providers and consumers as it brings a higher level of confidence and assurance in the selection and installation of roof integrated PV systems," said John Holden, MCS Certification Manager at BRE Global.

"Certificating a roof-integrated PV product with BRE Global against the requirements of MCS 012 provides independent confirmation that a product has met industry recognised wind, fire and weather resistance requirements."

The development of Sunstation by Solarcentury follows research last year which found that 86 percent of homeowners want new additions to their home to 'look stylish'.

UK's pioneering floating solar farm secures bank support

OST Energy, a leading independent engineering consultancy, has announced its work with UK bank, the Royal Bank of Scotland and leading solar energy company Lightsource Renewable Energy to bring Europe's largest floating PV solar project to financial close earlier this year.

The 6.3 Megawatt peak array now provides a source of clean energy to water utilities company, Thames Water, on the Queen Elizabeth II reservoir west of London, and has become the first floating solar project to secure European bank financing. Thames Water will buy all energy generated by the project as part of a power purchase agreement (PPA) with Lightsource.

Prior to construction, OST Energy acted as technical advisor to lender RBS, providing a range of due diligence services crucial to the final investment decision.

As floating solar moves from concept to large-scale development, the involvement of a major European bank in the financing of the project is a significant milestone for the industry and a recognition of the considerable commercial advantages afforded by the technology.

Concern over solar PV scam reports

MCS has been receiving an increasing number of reports from consumers claiming to have been contacted by companies – cold calling and offering free health checks on their solar PV installations in conjunction with MCS. The scheme is aware that it is being misrepresented by individuals and companies claiming to either be working for, or with, the MCS carrying out these checks.

The MCS is keen to make it clear that it has not partnered with any installation or maintenance companies and contact details are not coming from MCS directly.

Consumers have notified the scheme about calls regarding maintenance, upgrades, safety checks, inverter checks and buy back solar solutions. It has also been claimed that if the system inverter, which forms part of a Solar PV installation, is not replaced and a fire ignites on the roof, the Fire Brigade will not respond. This is categorially untrue. MCS is highly concerned about such pressure selling and scaremongering. Replacing the system inverter is not an automatic/mandatory requirement and system owners should not feel pressured into making this purchase.

MCS is working closely with Trading Standards to end these practices. Anyone who has heard of companies or individuals offering these services to consumers is asked to contact Trading Standards through the Citizens Advice helpline (03454 040506) or MCS (020 7090 1082).

Local authorities inspired by Bristol community energy

Bristol City Council last month welcomed local authorities from across the UK wanting to learn how to kick-start community energy in their cities. The council's showcase event shared tools, techniques and tips from the city's and the country's top community energy experts.

Local authorities face a future of budget cuts but still have ambitious carbon targets to meet. Community energy can help address both of these challenges, whilst supporting communities to take ownership of energy.

By putting renewables technologies on community buildings or financing and running solar farms, Bristol's communities are benefitting from reduced energy prices and using profits to support other initiatives. Local organisations in Bristol play an invaluable role in developing bespoke initiatives to deliver on the specific needs of individual communities.

The event was attended by more than 30 local authorities. Jane Altouyan from Southampton City Council said: "I found the Bristol Community Energy Showcase a very inspiring day and have taken away several ideas, along with guidance, for where I can find further information about potential future projects. Bristol City Council has demonstrated that local authorities joining forces with their community can achieve big things."

Photon Energy completes largest installation order

Reading-based Photon Energy has marked the installation of its biggest order with the completion of the £1.2 million solar PV system at BSkyB's Building 2 in Osterley, West London.

Now fully commissioned, the system is comprised of 822 SunPower 345Wp modules and 550 SunPower 327Wp high-efficiency PV modules, giving a total installed capacity of 463.4kWp. SolarEdge inverters and optimisers are used to maximise the energy output from the PV system as parts of the array will be shaded at certain times of the day. The PV panels are mounted on K2 Systems' aluminium frames fixed to timber frames and plate upstands integrated into the flat roof of the building.

It is anticipated that the new installation will generate a minimum of 441,100kWh/year.

Shock loss of UK solar jobs

A third of solar jobs have been lost in the past year and a further 30 percent of solar businesses expect to cut staff in the next 12 months, according to a detailed new analysis published this week by the Solar Trade Association (STA) and PwC.

The 238 solar industry firms surveyed collectively employed 3,665 people now compared to 5,362 a year ago, a fall of 32 percent. Four in 10 firms are being forced to either exit the solar market entirely or diversify to keep their heads above water.

Extrapolating the survey findings across the UK solar industry, the figure for job losses over the past year could exceed 12,500 – around a third of previous total employment in the solar industry, the STA found.

Solar deployment is expected to fall from an average of 1GW over the past five years to less than 300MW this year, a 75 percent drop.

Energy storage launch at Renewables Event

Swiss energy storage company Leclanché will be launching an all-inclusive battery and inverter pack for the residential market during The Renewables Event at the NEC in Birmingham on 13 and 14 September.

Leclanché is at the forefront of battery innovation and the launch of its new PV and energy storage solution is a small but significant strategic move towards providing a complete solution that will include the 3.2kWh well-known Leclanché LTO (Lithium Titanate) based TiBox, along with the brand-new hybrid inverter from the growing company Imeon, acting for both the solar panels and the battery.

Another version with G-NMC cells will also be available. This standardised approach is designed to ease the installer's life from the perspective of new customers to after-sales management.

The home storage system will store energy produced from the roof to enable its use at night.

The way electricity is generated, stored and delivered is evolving, and everyone may soon be able to play a part in that new economy. Leclanché battery experts have developed this LTO technology to enable applications that have never been possible in the residential area. This feature, called 'multicycling capability', is bringing rentability to the next level.

Leclanché is able to guarantee 15,000 cycles with its TiBox, which is significantly higher than the industry standard. This means the TiBox is capable of multicycling so even with 2-3 cycles per day, the battery will last for 15-20 years.

Surprise cut to renewable heat support threatens £140m of investment

The newly formed Department for Business, Energy & Industrial Strategy (BEIS) has laid an amendment in Parliament to the Renewable Heat Incentive to reduce support for Biomass Combined Heat & Power (CHP) systems.

The changes are targeted at Biomass CHP plants that use less than 20 percent of their fuel for electricity production (with 80 percent used for renewable heat). This change will affect all plants applying on or after 1st August 2016. Neither DECC nor BEIS had formally consulted with relevant trade associations or directly with industry on this specific change, surprising many and putting projects at risk.

The REA surveyed 36 companies developing biomass CHP projects in the UK, of which 34 had already made major equipment orders for or put down non-refundable deposits. REA discussions with member companies involved in Biomass CHP indicate many companies are facing up to a 35 percent reduction in their anticipated tariff.

DECC chiefs accused of misleading Parliament over prospects of failed Green Deal scheme

A House of Commons committee has accused the administrators of the Green Deal scheme of misleading Parliament with wildly inaccurate forecasts that wasted tens of millions of taxpayers' pounds.

MPs on the Public Accounts Committee say failures highlighted by the design and implementation of household energy efficiency schemes put public money at risk and cannot be repeated. The Committee's report concludes that take-up for the Government's Green Deal loans scheme was "woefully low" because the scheme was not adequately tested.

The forecast of demand for Green Deal loans was excessively optimistic, says the Committee, and "gave a completely misleading picture of the scheme's prospects to Parliament and other stakeholders".

It raises concerns that while taxpayers provided £25 million – more than a third of the initial investment in the Green Deal Finance Company – to cover set-up and operational costs, the Department of Energy and Climate Change had no formal role in approving company expenditure or ensuring it achieved value for money.

The Committee also found that the Government lacks the information it needs to measure progress against the objectives of the complementary Energy Company Obligation (ECO) scheme, including its impact on fuel poverty.

DECC implemented the Green Deal and ECO schemes in 2013 to improve household energy efficiency. It spent £240 million setting up and stimulating demand for loans under the Green Deal, which enabled households to pay for efficiency measures that they would repay through their energy bills.

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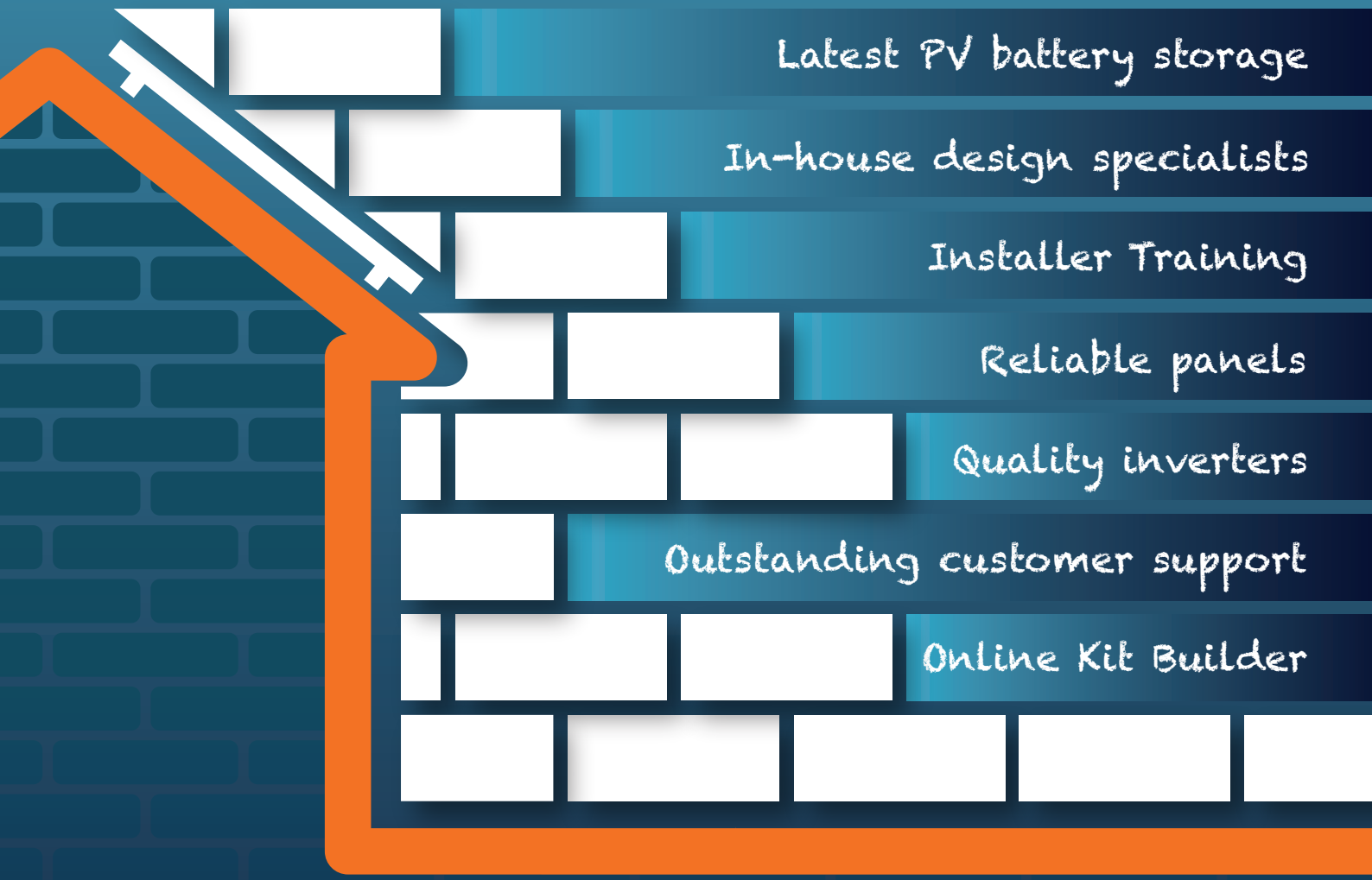

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How new O&M technology can support the domestic installer

Michael Middlemast of Seaward explains how advances in solar PV test instrumentation can be central to the development of efficient O&M strategies

Reduced government support for new projects, the maturing of schemes into post warranty stages and industry consolidation leading to larger portfolios have all come together to emphasise the need for effective asset management systems capable of ensuring optimal financial performance of solar PV installations.

Specifically, successful asset management systems must combine commercial and operational factors to ensure that the energy produced by a solar PV installation remains capable of generating the financial returns required. Fundamental to this aim of reducing risks for owners and investors are effective operations and maintenance (O&M) strategies.

Larger utility and commercial projects have always taken a more sophisticated view of O&M to meet the long-term performance needs associated with financial modelling and initial project investment decisions. Now residential solar installers are increasingly adopting O&M strategies to protect asset values, meet warranty terms for new projects and monitor component performance at the end of existing warranty periods.

In addition, other trends are emerging that are increasing the focus on O&M. For example, the growth of a secondary market, particularly in Europe, where solar PV assets are sold to new investors, has resulted in closer scrutiny of performance and reliability of generation. Elsewhere, third-party ownership financing, including power purchase agreements (PPA) and leases, has also highlighted the need for efficient O&M arrangements.

Factors such as these have seen large portfolios of solar PV assets coming into the hands of a relatively few operators and owners and this is also impacting on the O&M market. The economies of scale associated with multi-megawatt utility and commercial scale projects tend to favour the development of in-house project maintenance skills and resources. Alternatively, those bringing together several smaller sites, perhaps with a broad geographical spread, may prefer to outsource O&M support from specialist contractors.

The power of solar PV system data

Solar PV component or system faults leading to performance losses have to be minimised over the plant's lifespan. Central to achieving this is the ability to identify, diagnose and rectify faults quickly and efficiently.

PV plant checks to verify performance and confirm the viability of original financial models have become essential. Changes to Feed-in Tariffs have also created a need for owners and operators to perform detailed performance, revenue and financial analyses to ensure that projects can continue to meet debts and financing requirements – particularly during low irradiation months.

Against this background periodic electrical testing is the proven method to establish the reasons for any identified underperformance and to enable timely mitigation measures to be applied.

Preventative maintenance incorporating verification testing with a mobile tester will enable any degradation of modules to be highlighted and controlled and other system component faults to be identified. However, alongside on-site testing, collecting, transferring and managing system data is now fundamental. In particular, to enable the efficient performance optimisation of larger PV portfolios, central control centres are increasingly being utilised.

Linked weather and output data from individual plants enables PV power portfolios to be closely monitored and can also include a range of fault detections and other alarms to highlight below-expectation energy outputs. There is also a need for system measurements and field test data to be fed back into the central database for a completely closed information loop.

Solar PV test equipment

There are many instruments available that are sold under the title of 'solar testers' so it is vital to ensure that those utilised are capable of performing all of the tests required.

The absolute minimum testing that needs to be undertaken involves continuity measurements, open circuit voltage, short circuit current, insulation and irradiance.

However for fault finding and diagnosis, other test instrumentation can be useful. A solar power analyser can help ensure that an inverter and complete system is performing correctly and delivering the pay back expected by a customer. Thermal imaging cameras can highlight inefficient modules or cells. IV curve tracers, which measure the voltage and current output performance of a module, are not a compulsory requirement during commissioning, but can be very useful for O&M by helping to ensure correct performance against manufacturers' requirements and for various other forms of diagnostic testing.

To meet these various electrical test needs some contractors have traditionally used multiple instruments that include an earth continuity and insulation resistance tester, a multimeter and DC clampmeter, along with various associated connectors and leads. The risk with such 'homemade' kits is that not all of the tests required by original system commissioning and installation standards will be covered. Using such an array of instruments can also be cumbersome and time consuming.

This sort of consideration has led to the introduction of a new generation of dedicated multi-function solar PV electrical testers that are capable of carrying out all electrical tests required by international standards, such as IEC 62446, on grid connected PV systems.

With the push of a single button, combination testers carry out the required sequence of electrical tests in a safe and controlled manner. Testing can be conducted quickly and easily with the tester being pre-programmed to run an automatic sequence of required tests and using specially designed PV test leads which quickly connect and disconnect from the installation circuit.

For a comprehensive approach, an irradiance meter is also required to measure how much solar power is available at any particular location. The most accurate solar readings are provided by irradiance meters which utilise sensors which are similar to the technology utilised in the panels themselves and the ideal solution is to utilise an irradiance meter which uses a photovoltaic cell as its sensor rather than a pin diode.

With some instruments, special wireless connectivity between the multi-function tester and irradiance meters enables real-time irradiance to be displayed and measured at the same time as electrical testing is undertaken.

This means that irradiance, module and ambient temperature can be recorded in real time within the test instrument as the electrical tests are conducted. Once testing is completed, the USB download of time and date stamped test results, with irradiance and temperature measurements, provide full traceability and speeds up the completion of PV system reports and customer documentation.

In the latest generation of solar PV combination testers, the multi-electrical test capability has been linked with I-V curve tracing assessments. In this new test concept, alongside electrical tests, the Seaward solar PV200 produces I-V curve analysis on modules of strings in accordance with IEC 61829 to determine if the measured curve deviates from the expected profile and highlight the need for any further analysis or fault finding.

Partner organisation MCS presents its regular column for REI

Life after DECC

Managing Director of NAPIT Certification David Cowburn discusses how the recent restructure of the Department of Energy & Climate Change could affect the energy efficiency and renewables industry and beyond...

Amid the whirlwind of activity across Westminster through the last few months, perhaps one of the most overlooked shifts was the restructure of DECC on the 14th July. In its place, the newly appointed Prime Minister Theresa May's Government created a new department. The Department for Business, Energy and Industrial Strategy (BEIS) was formed as a merger between DECC and the similarly dissolved Department for Business, Innovation and Skills (BIS).

Since its formation in 2008, DECC had been the primary Government department tasked with advising and establishing energy policy across the UK. We often collaborated closely with officials within DECC to influence the design of installer schemes and to make sure that our members' views were represented, and will be sure to miss some familiar faces.

However, many of DECC's previous responsibilities that we have key interests in will now be inherited by BEIS. These include major long-term goals in energy and strategy, such as the national target of reducing carbon emissions by 80 percent by 2050. Equally, BEIS is committed to finding ways of reducing energy bills for hard-working families and businesses, which we hope will mean the continuation of key policies such as the Energy Company Obligation, Renewable Heat Incentive and Feed-in Tariff, and also result in an attractive new policy to encourage the able-to-pay sector to install cost-effective energy efficiency measures.

Our hopes for BEIS are straightforward: to continue to operate to the same standards as DECC in pursuing policy objectives, or even exceed them. We are determined to monitor the department's activities and make sure that it does not lose focus on the key areas that concern our

members and to learn from previous mistakes, such as over-complication of schemes.

Whilst some may regard the restructure as a step backwards for the climate change agenda, if BEIS aligns business, industrial strategy and the science base with energy and climate change policy, it could mean this Government will be best placed to deliver the significant new investment and innovation needed to support the UK's future energy policy. We will have to wait and see.

Micro CHP consultation

On Monday 1st August 2016, the Microgeneration Certification Scheme published a six-week consultation on extending the scope of the Micro CHP Standards to cover add-on units.

Industry stakeholders are invited to review and comment on proposed updates to MCS 014, MCS 015, MIS 3007, MIS 3007-2 as well as the Micro-Cogeneration Add-On Calculator and Micro-Cogeneration Add-On-Test Package: Test methodology based on PAS 67:2013.

It was initially envisaged that Micro CHP would be a replacement for boilers; however, the add-on units can produce electricity and are now efficient electrical generation systems. It was therefore agreed that proposed amendments to the standards be drafted to cover add-on units, thereby extending the scope of MCS.

The standards have been amended to cover the following:

- Commercial buildings as well as domestic dwellings
- Amendments on the technical documentation to be submitted for review
- Updates to Performance Criteria
- Inclusion of ANNEX 2 ADD-ON OR DHWPK MICRO-COGENERATION UNITS

The Micro-Cogeneration Add-On Calculator and Micro-Cogeneration Add-On-Test Package: Test methodology based on PAS 67:2013 have also been developed to be used by Manufacturers, Certification Bodies and Test Houses.

The draft versions of the Standards are available online at: http://www.microgenerationcertification.org/mcs-standards/consultations

All changes are shown in red text. All comments must be submitted to **MCSconsultations@gemserv.com** by 5pm on Monday 12th September 2016. Responses must be submitted using the response form provided. Please note that we are unable to accept feedback submitted not using the response form.

When submitting your feedback, please be specific and cite any clauses that you refer to. If you would like the wording to be changed, then please include your suggested wording and supporting evidence for the changes. Your response will be shared with members of the MCS technical Micro CHP Working Group.

GSHPA's Ground Source Energy Expo 2016

The GSHPA's upcoming Ground Source Energy Expo 2016 is to be held on 14th September at Aston Marina in Stone, Staffordshire.

The expo will combine a conference with an informal networking event for anyone interested in developments in ground source energy technology.

There will be five speakers from the industry influencers: BEIS, MCS, RECC, Ofgem and the Environment Agency and, following the presentations, there will be an opportunity to ask questions in smaller discussion groups led by the speakers to raise issues and obtain insight into the future of renewable heat in post-Brexit UK.

Survey reveals uncertainty in battery storage market

Report uncovers the need for developers, aggregators and lenders to work together to identify commercially viable ways to bring energy storage projects to market

The National Grid has been urged to provide more certainty on future frequency response capacity in order to drive the emerging energy storage sector.

SmartestEnergy, which pioneered the UK's first supply and offtake agreement for a battery storage project, consulted 45 battery storage innovators in the lead up to the first Enhanced Frequency Response (EFR) auction to explore the barriers they face to commercialisation.

The SmartestEnergy survey shows that there is great appetite and ambition to develop commercial battery storage, but still significant uncertainty around how projects can be funded with the limited revenue streams currently available.

Almost 70 percent of the battery innovators indicated that the biggest revenue opportunity they were looking to employ would come from grid services such as EFR contracts. The EFR contracts are ideal for battery technology and are the first step to unlock the potential of this sector. National Grid announced the winners of the first 200MW EFR auction in August.

However, with the pipeline of battery projects estimated to be at least 1GW, a significant amount of storage capacity will remain untapped because of the limited availability of contracts, risking the development of the market at this decisive time.

Another challenge reported is the length of grid services contracts available, which are currently too short to meet lender requirements. Almost half of battery developers surveyed expect payback to be achieved within 5-10 years and 16 percent believe it will take more than 10 years. The four-year EFR auction contracts are therefore forcing investors and developers to look at a mix of use cases to secure a positive return on investment. For example, by installing batteries alongside existing renewable energy projects.

Battery energy storage is a key driver in reducing the levelised cost of electricity from renewables and supporting its increasing contribution to the electricity supply mix. It is also a significant enabler of efficiency – reducing the amount of fossil fuel back-up generation needed to balance the grid. According to the National Infrastructure Committee's recent report, if battery technology costs continue to fall, up to 15GW could be economically deployed by 2030.

Robert Owens, Vice President of Demand Side Management at SmartestEnergy, said: "It's clear that the current EFR capacity in isolation will not be enough to unlock the full potential of batteries, so developers need to know what's next for the projects that don't win an EFR contract in this auction.

"National Grid needs to reassure these pioneers that there will be more revenue streams available for them in order to secure the battery capacity we need for the 'smart power revolution' and decentralised energy supply.

Owens also commented on the need for collaboration to drive innovation in the sector:

"It is also critical for developers, aggregators and lenders to work together to identify commercially viable ways to bring these projects to market. Given that storage is on the brink of commercialisation and has the potential to create transformational change in global energy systems, it is important that experience and best practice are shared in order to advance this sector."

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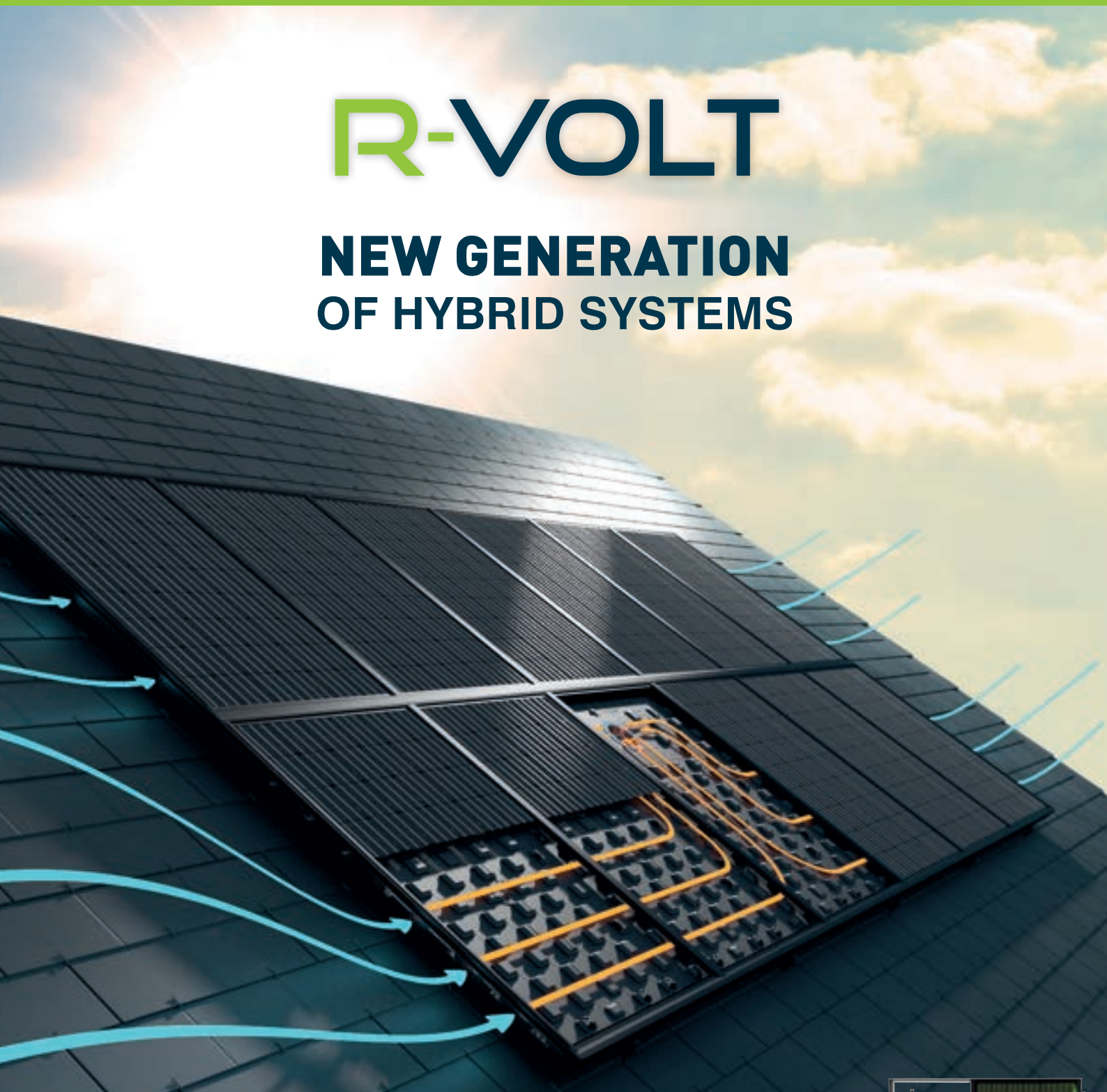

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ProductNews

Sharp

Monocrystalline PV modules

Sharp has announced the expansion of its energy solutions portfolio, with the launch of four new high-performance monocrystalline photovoltaic (PV) modules: the silver frame NU-RC300 (300W) and three stylish all-black modules, NU-RD290 (290W), NU-RD295 (295W) and NU-RD300 (300W). The 300W modules now offer the highest power output in the current Sharp solar line-up.

Monocrystalline cells are more efficient than polycrystalline, making them a good choice for homeowners with limited space on the roof. The new modules have an efficiency of up to 18.3 percent (300W), allowing homeowners to generate more solar energy from their roofs than before. The modules are also suitable for use in cold regions subject to snow, with the robust design able to handle a snow load of up to 5,400 Pascal (according to IEC 61215).

The modules are manufactured in Germany under highest international quality (ISO 9001) and environmental (ISO 14001) standards. All modules are fully MCS accredited by TÜV SÜD BABT, one of the world's leading certification bodies.

REC

TwinPeak 72 Series

REC, a leading European brand of solar panels, has begun mass production of the new REC TwinPeak 72 Series solar panel. With nominal power of up to 340 watt peak (Wp), the Series is bigger in size, delivers higher power output per square-metre, and is ideally suited to commercial, industrial, and large-scale applications worldwide.

Based on the REC TwinPeak Series, which was launched in 2015 and won the Intersolar Award for Photovoltaics that year, the TwinPeak 72 consists of the same four key technologies:

- Half-cut cell technology (144 half-cut solar cells)
- PERC (Passivated Emitter Rear Cell) technology
- Four busbars
- Split junction box spread across the middle of the panel, allowing an innovative panel design.

REC was the first manufacturer to successfully combine these into a single product on a multicrystalline platform for industrial-scale production. Together, they enhance power output in the TwinPeak 72 Series by around 20Wp compared to standard 72-cell panels. Installers, EPCs, investors and end customers will experience its advantages almost immediately, including lower balance of system costs and higher yield, thanks also to its improved performance in shaded conditions, enabled by the innovative 'twin' design.

As with all REC panels, the TwinPeak 72 is 100 percent free from potential induced degradation (PID), avoiding power losses even in high temperatures and humidity.

REHAU

RAUVITHERM

REHAU is expanding the range of pipe sizes it manufactures in the hugely popular RAUVITHERM polymer district heating system with the launch of both 140mm and 160mm diameter options.

This brings RAUVITHERM into line with REHAU's other pre-insulated pipework range branded RAUTHERMEX, and gives its customers a solution for virtually every district heating application.

The new sizes, available in 12m lengths, have been introduced in response to demand from customers for RAUVITHERM pipework that is suitable for higher volume installations. The 160mm version can be used for over 3MW of heat through a single pipe at 80/50°C flow and return temperatures.

REHAU has made RAUVITHERM pre-insulated pipework at its factory in Blaenau, North Wales, since 2012 and says this latest move demonstrates its commitment to manufacturing in the UK.

Aura Light

Lezzon LED luminaire

Aura Light's new Lezzon LED luminaire is one of the latest products to join the market, offering a stylish twist to the classic linear luminaire.

Lezzon forms a part of Aura Light's architectural range of luminaires, which provide a modern lighting solution for offices, schools, universities and other public spaces. The luminaire offers a more stylish and unusual outline compared to a traditional linear luminaire and is wire suspended for an exciting, contemporary addition to any room.

The luminaire now also incorporates Aura Light's Tunable White technology to allow users to adjust the colour temperature to promote natural light levels, which is known to improve productivity and concentration, a particular benefit in working and educational environments.

Vaillant

Green iQ

Set to take domestic heating technology to a new level, Vaillant has launched Green iQ; an industry-first label that distinguishes well engineered, high-quality products that are both sustainable and connected for the future.

The result of a two-year strategic investment project, Vaillant's Green iQ answers the growing demand for energy-efficient heating solutions that are supported by clear sustainability and performance credentials.

Any Vaillant product carrying the Green iQ mark offers a guarantee that they are not only extremely energy efficient and deliver eco-friendly heat generation, but also fully equipped to take advantage of app-based heating controls and smart phone technology.

Waxman Energy

BYD battery packs

Waxman Energy, specialist in the design and distribution of Solar PV and battery storage systems, is pleased to introduce BYD battery packs to its product portfolio.

As the solar landscape changes, with more emphasis on self sufficiency and solar independence, Waxman Energy is evolving with the industry to offer a wide selection of battery storage products. Catering to the needs of installers, the company has partnered with BYD to provide battery packs that are compatible with a number of storage systems.

The BYD B-Plus 2.5, a cutting edge iron-phosphate battery that has been developed to offer streamlined energy storage, is manufactured by the same company that gives power to London's electric buses. It is a single 2.5kW battery that can be used alongside battery storage inverters to maximise the use of solar PV generated energy. Waxman Energy is confident it will be a complementary addition to its solar PV battery storage offerings, such as GoodWe's ES and BP systems with which the B-Plus 2.5 is compatible.

Life-changing experience for STEM students

Promoting science and engineering careers to young people is a common theme for many companies nowadays, and is being given particular attention by Nottingham-based renewable energy company Sasie Ltd.

Following a successful work placement to encourage 90 young women into science careers, Sasie has now expanded its horizons and taken a further 51 young people to Germany to study renewable energy and engineering topics, thanks to a successful funding bid from Erasmus+. In late April 2016, students aged 16-18 from schools across Nottingham were invited to join Sasie on a visit to Wildpoldsried, Bavaria, to spend two weeks immersed in renewable technologies, in conjunction with partner organisation Christiani GmbH and supported by School Energy Efficiency CIC.

Wildpoldsried, famous for its extraordinary level of renewable energy generation, was an ideal destination for the group. Generating nearly 700 percent of its electricity requirements and over two-thirds of its heating requirements, Wildpoldsried contains solar photovoltaics, wind turbines, biogas, biomass plus CHP plants and a district heating scheme, and excels in teaching, innovation, research and leisure alike. Wildpoldsried's gold European Energy Award allows students to discover how simple it is to generate energy by a clean and sustainable method, and, crucially, how a community can unite to deliver benefits to all its members.

Partner organisation Christiani designed the itinerary. Alongside studying Wildpoldsried's many features, students built their own 'solar work briefcase'; this involved mounting a solar panel, connecting the battery, fuse and mains adapter, and completing all necessary wiring. Students visited a hydroelectric power plant providing electricity for a city, a waste combustion plant with annual emissions less than a single cigarette, solar battery manufacturer Sonnen GmbH and other locations showcasing innovative uses of renewable technologies, such as a house that rotates to face the sun and solar panels that increase crop production beneath them.

Students gained an Award in the Rational Use of Renewable Technologies, offered at Level 2 or Level 3, designed and written by Sasie. Students then demonstrated their knowledge by completing a desktop solar photovoltaic assessment on a building of their choice, taking into account many parameters such as orientation, irradiance, inclination, shading, payback period and financial benefits.

Supporting the placement was James Veness of School Energy Efficiency CIC. By delivering interactive presentations and workshops with leading businesspeople and environmental campaigners, students gained an understanding of the wider sustainability issues such as plastic pollution and how renewable technologies are used to make a difference to the lives of people in poor rural communities.

The excursion was made possible due to funding from Erasmus+, the EU's programme giving opportunities for students to study across Europe. For many students, this was the first time they had travelled abroad, and feedback was phenomenal.

How to put residents at the heart of community heating

Community heating specialist Switch2 Energy has published a free guide on how to design and implement heat networks around the needs of residents.

'The Joined Up Thinking Guide to Community Heating' advises developers and landlords on putting customers at the centre of their heat network plans. New rules under the CIBSE Heat Networks Code of Practice, the Heat Trust scheme, and Heat Network (Metering & Billing) Regulations are explained.

The guide details the step-by-step process to getting community heating schemes right – from complying with mandatory rules and voluntary codes through to smart metering and fair and flexible billing, to meeting guaranteed performance standards and putting in place fault reporting and complaints procedures via effective communication channels.

Kirsty Lambert, Director of Business Development at Switch2, said: "As the industry matures, there's been a marked shift in focus from the technical nuts and bolts to customer service. After all, it's the residents who fund the long-term delivery and operation of community heating schemes."

Report reveals mixed renewable energy progress

Renewable power now provides 19 percent of England's electricity – but take up varies hugely across the country – according to a new publication, 'Renewable energy: A local progress report for England'. The report, by renewables experts Regen SW, is the most detailed analysis to date of the progress of renewable energy in England.

England generates 54,962GWh of renewable energy, enough to power 14.5 million homes or 62 percent of all households, from 736,998 renewable energy projects. However, the country is still a long way off its targets, with slow progress in renewable heat meaning that just five percent of total energy consumption in England is met by renewables. Recent Government policy changes have led to slower progress this year and a poor outlook for the year ahead.

Local factors such as the amount of sun and wind, electricity grid infrastructure and public support play a key role in renewable energy deployment. The East Riding of Yorkshire leads on the amount of onshore wind due to favourable resource and planning. Peterborough and Mid-Devon have over 10 percent of houses with solar PV installations as a result of social housing programmes, an engaged population, active community energy groups and trusted local installers. London is bottom of the table with just three percent of its electricity from renewables.

Merlin Hyman, Chief Executive of Regen SW, said: "This decade has seen remarkable growth in renewable energy in England. This is a public policy success story – a combination of public and private investment has led to innovation and technological progress, new industries and rapidly falling costs.

"The recent Government policy changes are taking the UK out of the global fast lane of renewables and the impact can already be seen on the ground. However, the global shift to a smart, decentralised and renewable energy system is now unstoppable and the leading areas of England are showing how this shift can be turned into an opportunity for businesses and local communities.

"The uneven take-up of renewables across England demonstrates that a transformation in our energy system is not just about decisions in Whitehall and corporate boardrooms. Renewable energy projects depend on an enabling local environment and the engagement of local communities."

ENERGY 2016
18–20 OCTOBER • NEC • BIRMINGHAM

Energy 2016: Connecting the energy industry

Connecting the energy industry like no other event in the UK, Energy 2016 is back for its second year at the Birmingham NEC on 18-20 October, as part of the award-winning UK Construction Week

Uniting all the key business players in the industry, such as architects, project and energy managers, engineers and developers, Energy 2016 will provide a perfect platform to bring together the sector and the wider interconnected industries. The event is already backed by leading industry bodies such as the **Renewable Energy Association (REA)**, the **British Institute of Facilities Management (BIFM)**, the **Energy Managers Association (EMA)**, the **Electrical Contractors' Association (ECA)**, the **Institute of Environmental Management and Assessment (IEMA)** and many more.

Over 8,500 industry professionals attended last year's event and with a programme of high-profile speakers, seminars, CPD workshops and a Hosted Buyers Programme, Energy 2016 is not to be missed.

Visitors will also benefit from the event's co-location alongside eight other trade events being held at UK Construction Week. Offering the unique opportunity to network with individuals and companies from across the entire construction industry, visitors can explore five halls of the NEC, which will be packed with relevant products, services, features and businesses.

Registering to attend Energy 2016 is quick, easy and free and can be completed by visiting **www.energyliveshow.co.uk**. By completing the form, trade visitors can access all nine shows at UK Construction Week.

Central to the space will be the Energy Hub, a dynamic platform for the show's comprehensive seminar content. Incorporating a mix of panel discussions, live debates and CPD seminars the Energy Hub content will address the core issues in the industry today as well as give insight into the latest regulations, policies and technologies.

The content has largely been shaped by the outcomes of the high-level debate hosted by Energy 2016 earlier in the year. The event brought together leading energy specialists, including Natalie Bennett, Leader of the Green Party, and Steve Fitzsimons, Senior Manager Infrastructure Services at EDF Energy, to discuss key issues such as energy storage and its role as a crucial facilitator for the future of renewables in both domestic and commercial environments.

Nick Blyth, Policy & Practice Lead, IEMA, will be opening this year's event followed by a three-day seminar programme at the Energy Hub. On day one Bekir Andrews, Group Sustainability Manager at Balfour Beatty, will

address the need for **Adapting to an Ever-Changing Energy Landscape**, followed by an open Q&A session. The lunchtime panel discussion, **Opportunities in Residential to Commercial Energy Storage**, will explore the relationship, journey and opportunities that exist between residential and commercial energy storage units. Speakers include David Pickup, Policy Manager at the Solar Trade Association, Mark Donovan, Principal Engineer at UK Power Network Services and Marc Stanton, Commercial Director at Clean Power Solutions.

Also on day one visitors will have the opportunity to find out about **Paving the Future of Smart Cities with Energy from Footsteps**, a revolutionising digital flooring concept by Pavegen. Indeed, the company's kinetic flooring solution will be used to light up the central bar for all the visitors to see the product in action.

On day two, the lunchtime panel discussion, **Working Towards a Greener and More Sustainable Future**, looks at how the supply chain is working towards more sustainable, energy efficient commercial buildings with a specific focus of meeting the 2020 zero carbon target. Speakers include Natalie Bennett, Andrew Mellor, Partner at PRP, Mark Harris, Divisional Building Technology Director at Kingspan Insulated Panels, and Sara Kassam, Head of

Sustainability Development at the Chartered Institution of Building Services Engineers (CIBSE).

The closing session on day two, chaired by Tony McNally, Managing Director at Climate Change Solutions Ltd and with speakers including Jon Hunt, Marketing Manager at Toyota and Lexus Fleet Services, Matthew Dear, Partnership Manager at Hydrogen London – Greater London Authority and Tony McNally, Managing Director at Climate Change Solutions Ltd, will give an overview of the business opportunities that hydrogen and fuel cell technology can offer.

Day three will start with a focus on renewable energy and the biomass industry within the UK. Government incentives are being 'reformed' and new innovative solutions have recently become available that will help reduce waste costs and generate energy. During the Seminar, **The Changing Face of Biomass**, leading industry figure, David Coyne, CEO of Ashwell Biomass, will discuss developments within the sector and focus on how these are likely to affect the market.

Two great panel discussions will also be on the programme for the final day. The first one will ask: **Are EVs the Solution to Resolving the Energy Crisis?** 2016 has seen a massive growth in the EV market with developments from the likes of Tesla, Nissan and even BMW. Speakers for this seminar include: Christopher Jackson, Director at Flexisolar Ltd, Michael Wayne Bexton, Head of Energy Projects at Nottingham City Council, and Erik Fairbairn from Pod Point.

The second discussion, **The Great Innovation Pitch**, will look at the latest innovations and forecasts for innovations in energy. Confirmed speakers are: David Pybus, Business Development Executive at Pavegen, and Matthew Lumsden, Managing Director at Connected Energy.

In addition to the Energy Hub, the REA will also host a range of half-day conferences throughout the show, covering topics such as energy storage and renewables in the built environment. What's more, Energy 2016 will host a VIP lounge bringing a string of high-profile buyers and visitors to the show. The Energy 2016 VIP section will be located within the show's footprint, offering exhibitors the unique opportunity to interact with some of the biggest players in the industry.

Doubling in size from last year's event, Energy 2016 boasts an impressive line-up of industry leading exhibitors and is not to be missed by anyone in the sector.

Ranking amongst the top six power companies in the country, Scottish Power provides over five million households and businesses across the UK with power and will bring its wealth of expertise to this year's event. With over 100 years' experience there are few companies who understand the energy sector better.

One company making ground-breaking steps in the energy sector is Pavegen. The company will be unveiling the latest iteration of its technology, known as V3, at this year's event and its innovation will be integrated into the flooring of Smart Buildings 2016 with the resultant energy used to power the rest of the event.

Other companies showcasing their expertise at the NEC include leading independent renewable energy provider RES Limited and Flexisolar, a leader in the field of solar technology.

The nine shows making up UK Construction Week in the one location – boasting over 650 exhibitors and expecting some 48,000 trade visitors in total – are Timber Expo, the Build Show, Civils Expo, the Surface and Materials Show, Energy 2016, Plant & Machinery Live, HVAC 2016, Smart Buildings 2016 and Grand Designs Live.

Companies signed up to exhibit at this year's Build Show include British Gas, Fluke UK, Eaton, Minus7 and Clean Power Solutions (CPS) to name but a few.

Following the success of last year's event, the award winning UK Construction Week will once again offer much more than just access to hundreds of industry leading exhibitors and associated products and services. With several new industry awards celebrating excellence in the sector, the entertainment programme will also see the return of its popular beer and ale festival and much more.

Free to enter for all UK Construction Week visitors and exhibitors, the festival will provide a vibrant and social way to unwind at the show with more than 30 craft ales to try and live music. Entry is completely free as part of visitors' trade registration to UK Construction Week and there will be a selection of gourmet food options from various stalls surrounding the venue.

On the first evening of UK Construction Week the prestigious new Vox, NEC Birmingham venue will host the first Construction Enquirer Awards. With an expected audience of 500 people, the awards are open to contractors, clients and suppliers, with the winners decided by an industry vote. A Top 10 will be published for the 12 different categories and the ultimate winners revealed on the night.

Thermal training

Thermography training can help installers improve their O&M portfolio. **Steve Pester**, Principal Consultant, BRE, explains...

Many renewables installers have been looking to diversify since the last round of Feed-in Tariff and Renewables Obligation cuts, and some have opted to pursue O&M work as an alternative to installing new systems. One of the really useful tools that modern technology can offer to O&M contractors is thermal imaging, or thermography to give it its correct name. Why? Because it can quickly reveal overheating components, air locks in pipes, water under surfaces and hot spots in photovoltaic panels, to name just a few applications.

A thermographic image is a picture of the temperature distribution across a surface. However, confusingly, a thermal camera does not actually measure temperature directly; it measures the amount of heat being given off by an object, ie. radiation in the infrared (IR) waveband. This fact means that it is very easy to be fooled by an IR image unless you have appropriate training and have set up the camera to compensate for unwanted effects.

For example, if you want a reasonably accurate measurement of the temperature of a surface, it is essential to set up the emissivity of the surface in the camera. The emissivity is the ability of a surface to emit heat, and depends mostly on the material the surface is made of. Unfortunately, how shiny or dull a surface appears in visible light is no guide at all to emissivity in the infrared, so it has to be measured or looked up in a table before the temperature can be measured.

Reflections too are a big deal in thermography, and commonly lead to misunderstandings when interpreting images. Software is available for use with IR cameras, but it cannot compensate for an incorrectly configured camera after the photo is taken.

So, the take-home message is that thermography is a powerful tool, and the friend of the O&M engineer, but only with adequate training and good equipment.

CURRENT AFFAIRS

The nuclear debate is good for renewables, says **Bill Wright**, Head of Energy Solutions, ECA

Hinckley Point, you really couldn't make the story up. How did we get into this mess? On the one side we have the Government saying that we need nuclear and Hinckley will provide seven percent of our electricity. On the other side you have EDF, which has prevaricated over a very major investment and finally come to the decision to go ahead, losing several Board members on the way. Then just as the marquees are being erected for the signing ceremony the UK Government stops and calls a review that will make a decision in the Autumn. What message does this send out?

We will still need nuclear power stations to provide a 'base supply' for the UK but this is perhaps not the right nuclear technology or finance arrangement. The nuclear station at Wyfla in Anglesey still seems to be on track and perhaps this will be the first online!

However, the good news is that this gives a golden opportunity for the renewables and energy efficiency industries to promote the sensible alternatives to the proposed power station. Just across the Bristol Channel there is the Swansea Tidal Lagoon scheme, in review stage, which although potentially expensive uses proven technology, is a pure renewable source and – if the projected further schemes around the Welsh coast are implemented – would give, in aggregate, power at all times of the day. Wind opportunities can be further exploited and we have an established wind turbine industry which could further be developed. Then there is energy storage, which when coupled with renewable energy generation can smooth out the intermittent nature of the power produced.

Lastly, there is of course good basic energy efficiency, which can realistically be called the fourth power source; the others being nuclear, fossil fuels and renewables. It is far more economical to save energy than it is to produce it.

Let us not waste this opportunity. Just think what £26 billion could produce in the way of renewable energy sources and energy efficiency.

Where UK's solar and clean energy industries meet

Clean Energy Live, held between 4 – 6 October 2016 at Birmingham's NEC, will bring together the UK's entire solar and clean energy supply chain, providing attendees with strategic information necessary to beat the current market uncertainty created by a string of policy U-turns.

As many as 5,000 attendees are expected to gather in Birmingham over the course of the week as the UK's renewables industry looks to shift gear. While the government's overhaul of subsidy frameworks has presented a bump in the road, the much wider energy transition currently taking place provides ample opportunities that installers and contractors can take advantage of.

Clean, decentralised energy is quickly going mainstream and Clean Energy Live – formerly Solar Energy UK – will be the meeting place for installers, generators, financiers, large energy buyers and corporate customers to discuss their place in that transition.

Now in its seventh year, the event will showcase opportunities across the spectrum. Smart homes and future installer sessions have been designed to help organisations future proof their businesses and understand how the residential and commercial markets are maturing, while the conference programme includes updates on the Irish, European, African and Indian markets.

Energy storage will be a central theme to this year's show. The Energy Storage theatre will broach topics such as policy and regulation, financing, technical parameters and case studies from more mature storage markets in Europe. The results of National Grid's 200MW Enhanced Frequency Response tender will also be discussed, including a look at what happens next for those projects lucky enough to be successful in the process.

Jerry Hamilton, Channel Manager of Tesla's new Powerwall home battery device, said: "The transition from just solar to now clean energy - and including solar as part of the overall energy mix is key for the evolving solar market. Tesla will not only be demonstrating its battery technology products but sharing its views and ambitions on how to accelerate the world's transition to sustainable energy."

The evening of Wednesday 5 October will also see the industry gather to celebrate the past year's achievements at the traditional Solar Power Portal and Clean Energy Awards, hosted this year by stand-up comedian Jimmy Carr. Attendees will enjoy a drinks reception, gala dinner, awards ceremony and evening entertainment as 13 trophies are handed out to the best and the brightest of the renewables sector. Tickets are still available, but selling fast.

To register for free and for more information visit cleanenergylive.co.uk.

REHAU TABS at heart of Tate Modern extension

REHAU's Thermally Activated Building Structure (TABS) system is at the heart of the newly opened £260 million extension to the Tate Modern on London's South Bank.

In what is the highest profile TABS installation in the UK yet, REHAU's PE-Xa pipework has been embedded in the concrete slabs that make up each floor of the new building to circulate cooled water and provide environmentally sustainable comfort cooling throughout.

Work began on the project in 2012 when REHAU originally began supplying the pipework and fittings to Byrne Bros Formwork, who were producing all of the pre-cast concrete slabs for the 10-storey building off-site at their facility in Beckton, East London.

Loops of more than 24,000m of pipework were installed on the reinforcement before the concrete was cast, and REHAU's EVERLOC compression sleeve fittings were used to joint the embedded pipework when the slabs were delivered to site.

The TABS concrete core tempering solution effectively transforms the slabs into huge thermal stores for cooling of the gallery space. Groundwater is even being used to circulate through the pipework to optimise the sustainability of the installation.

The benefits of the TABS technology – most notably low investment costs, high levels of comfort and performance, 'soft cooling' with no draughts and the ability to reduce the output of other cooling devices – are ideally suited to the requirements of the huge gallery spaces, which are expected to receive in the region of five million visitors per year.

TABS was a key element in the M&E design of the building carried out by consultants Max Fordham, which also uses waste heat from EDF Energy's on-site transformers. Scoring a BREEAM 'Very Good' rating, the new Tate building is predicted to use 50 percent less energy than a typical gallery and generate 44 percent less carbon than current building regulations demand.

BSW Timber fires up a £2.5m biomass boiler

BSW Timber has become the first UK sawmiller to generate electricity from biomass fuel with the commissioning of a £2.5 million combined heat and power (CHP) boiler at its Carlisle mill.

The state-of-the art 3.2MW CHP boiler is now operational and forms the latest phase of BSW's £11 million investment programme in biomass energy across its mills in the UK and Latvia.

During the last five years, BSW has commissioned seven biomass boilers at sawmills across the UK and Latvia, resulting in total heat capacity of some 38MW to generate heat for the kiln drying process. The Carlisle plant will provide heat for the kilns, treatment plant and offices, whilst also producing electricity to be used in the sawmill production process.

The Carlisle CHP plant was delivered in partnership with biomass experts Dallol Energy. Welcoming the commissioning of the new Carlisle CHP plant, BSW Timber's CEO Tony Hackney said: "BSW's current investment in biomass technology means that we are now saving more than 12,500 tonnes of CO2 (3,421 tonnes of carbon) each year, across the business."

BSW Timber is the UK's largest consumer of home-grown sawn softwood timber, consuming almost two million tonnes each year.

Much of the timber is dried in on-site kilns that were previously fuelled by oil boilers, with the co-products of the sawmilling process – including wood chips and bark – removed from the site by road transport. By transferring heat production to CHP boilers and using co-products as fuel, BSW is also significantly reducing its reliance on road transport.

As well as the Carlisle plant, BSW Timber operates two 3MW biomass boilers in Newbridge-on-Wye in Powys, a 5MW plant in Dalbeattie, Dumfries and Galloway, an 8MW plant in Latvia and two 5MW plants in Fort William in the Scottish Highlands. This latest investment was part of BSW's agreement with the UK government, as part of their Carbon Commitment Agreement; in return the company receives a discount on environmental utility taxes for 10 years.

Historic home switches to biomass

A historic mansion housing one of the world's finest collections of antique miniatures is reaping the benefits of being heated by the latest in 21st Century green technology.

Northumberland-based re:heat has installed two 50kW wood pellet fired biomass boilers to keep visitors, staff and the valuable collections in Nunnington Hall, near York, at the optimal temperature.

Owners the National Trust appointed re:heat after a competitive tender process. The new biomass boilers replace an old, inefficient oil-powered heating system, giving the hall clean, renewable heat and helping preserve its stunning Carlisle Collection of dolls house-style rooms and figures.

The complex project was completed to time and specification by re:heat's engineers as part of the National Trust's environmental commitment to substantially reduce carbon emissions at its properties and deliver 50 percent of its energy from renewable sources by 2020.

An oil-powered boiler, storage tanks and pipe network running from a garage under a courtyard to the stately home were removed.

"This was a very sensitive site and the spec that we were given was quite challenging in that a very old heating system was in place, which needed to be replaced to meet the Hall's present day and future needs," explained re:heat director Ben Tansey.

"Cost was one of the key drivers for the National Trust but there was also a requirement to remove potentially hazardous

materials from the site such as oils.

"We had a restricted timeline of eight weeks to fit the boilers to minimise impact on the general public. We were only allowed to drill in certain places and had to work alongside conservation builders when installing the system."

Medieval castle moat used as renewable energy source

Baystar, a building services company specialising in renewable energy, has won a project contract to design and install a water source heat pump system at Herstmonceux Castle, near Hailsham in East Sussex. Baystar is working directly with the Bader International Study Centre (BISC), carrying out a feasibility study before commencing the design, supply and installation of the system.

The Herstmonceux Castle estate is a popular tourist attraction comprising the magnificent medieval moated castle amidst 300 acres of formal themed gardens and woodland. It is also home to BISC, which is part of Queen's University, Canada.

With an annual oil bill of £70,000 to heat the castle building only, BISC had been looking at ways to reduce the energy spend. A detailed feasibility study was carried out, establishing that given the high summer heat load, and the good thermal mass in the solid brick walls, the most sustainable solution for the castle was a water source heat pump system, utilising the moat as the heat source.

Following the report and with the contract awarded, a full water source heat pump system has been designed and installation has commenced. The collector has been put in and mechanical installation of the heat pumps is being finalised.

"Once fully commissioned, the system will drastically reduce the castle's reliance on oil and will improve its heat efficiency," said Tessa Guy, Managing Director of Baystar, which has worked on several historic properties in the South East. "Working within a medieval castle is a privilege."

Hydroelectric powers housing development

Garnett Wharfe, a pioneering David Wilson Homes development regenerating a historic derelict paper mill site, has seen the installation of a twin Archimedean screw turbine on the River Wharfe over the historic paper mill weir in Otley, West Yorkshire.

The hydroelectric project, which is being managed by Eric Wright Civil Engineering and Lowwood Products, has seen the installation of two 3.7m diameter screw turbines near the new housing development. A turbine house is located above the turbines, which will house the electromechanical equipment, including the gearbox, generator, control system and transformer.

During operation, the hydroelectric facility will match its output of energy to that delivered by the river, first ensuring sufficient water passes over the weir and down the fish passes. Any surplus will be taken through the screws up to a maximum flow rate of 13,500 l/s, or 13.5 tonnes of water per second.

The installation will be connected directly to the housing development via a private grid network to supply the Garnett Wharfe development and surrounding areas, subject to demand and generation levels. In addition, the site will use the natural river flow and fall over the existing weir. The scheme, which is rated at 350kW (175kW per screw) is expected to provide an annual energy output of 1,011MWh. This is sufficient to meet the average annual electrical usage of 290 UK homes.

GROUND SOURCE HP

What: Ground source heat pump supplies heat to veterinary practice

How: Finn Geotherm installs 2 Lampoassa Esi 14 GSHPs

Result: Two heat pumps working in tandem achieve outputs of around 30kW

Vets benefit from renewable heating

An expanding veterinary practice in Norfolk is benefitting from heating and hot water at reduced cost, thanks to a ground source heat pump installed by renewable heating experts Finn Geotherm.

Hannah Kelly, owner of Wood Farm Vets, started the practice in 2014 to care for large and small animals. Initially, Kelly ran the practice from her home, a farmhouse in Wymondham, South Norfolk, but rapidly outgrew the premises. "When my lounge became the waiting room, I knew we had to find a better solution," she explained.

Kelly began to renovate a grade two listed former corn barn on her land to create a modern mixed practice. She needed a heating and hot water system that would be able to cope with the demands of her busy business, as well as servicing her house, which had previously relied on an oil boiler. Wood Farm Vets wanted a sustainable, future-proof solution so ground source heating was ideal.

With a generous amount of land available for a 1700m collector loop, Finn Geotherm specified and installed two Lampoassa Esi 14 ground source heat pumps with a 1000 litre Superheat thermal store. A former outhouse was transformed into the plant house for the pumps and thermal store. The vets had both underfloor heating and radiators installed, while Kelly's house used its existing radiators. While the single phase electricity in the premises initially presented Finn Geotherm with a challenge, the careful specification of a system with two heat pumps working in tandem achieves outputs of around 30kW, far above other similar systems.

SOLAR PV

What: World's first solar PV road surface

How: Colas to start trials of its innovative solar road solution

Result: Each solar panel is comprised of 15cm-wide cells and is resistant to large vehicle traffic

Colas to install solar road system

Colas is set to start trialling its innovative solar road solution, Wattway, and is in the process of identifying potential sites with clients interested in the world's first-ever photovoltaic road surfacing.

The technology gives clean, renewable energy, while allowing for all types of traffic. The solar panels are installed on top of an existing road surface.

Designed and tested to endure vehicles continuously passing over the surface, the panels are only 7mm thick and are applied on the surface using a high-performance resin. The fragile PV cells are coated in a multilayer substrate composed of resins and polymers, translucent enough to allow sunlight to pass through, and resistant enough to withstand even large vehicle traffic. The composite perfectly watertight 'sandwich' is also designed to adapt to the pavement's natural thermal expansion. The surface that is in contact with vehicle tyres is treated to ensure skid-resistance equivalent to conventional asphalt mixes. Electrical connections can be installed at the edge of the carriageway or in ducts integrated in the panels themselves.

Power generated by Wattway has the potential to be used for highways and transport infrastructure, such as variable message signs and street lights, but could also be returned to the grid or used to supply nearby homes and businesses. It is particularly well suited to smart grids and short-circuit electricity production, as the need for new sources of energy and electric mobility continues to rise.

Data will be gathered on Wattway's functionality in parallel with the site requirements, as well as how efficiently it generates energy. This will be shared with Colas' Campus for Science and Technology (CST) near Paris, where Wattway was developed over a five-year period in conjunction with other key partners and where the innovation is now being pre-industrialised for a full-scale global launch from 2018.

SUSTAINABLE HOMES

What: Homeowners open their doors to exhibit green energy

How: Series of events show how green technology can power homes

Result: Households get a first-hand look at the advantages of sustainable energy

Through the keyhole

Glasgow residents had the chance to look through the keyhole at one of Scotland's most inspirational green homes when Bearsden residents Heather and Michael Gillan opened their doors to the public.

The open day was part of a series of 'Green Designs' events showcasing properties on the Green Homes Network, managed by the Energy Saving Trust. Visitors were able to look around, chat to the owner about their experiences, and get specialist advice about energy efficiency and renewable technology for their own property from Home Energy Scotland.

The homes taking part in the scheme across Scotland this year include sustainable new-builds, unique eco-homes and historic properties that have been modernised with green technology.

The Gillans' 1930s bungalow, with technologies ranging from electric vehicles and solar panels to enhanced insulation and smarter heating systems, definitely has the 'wow factor'. Their journey started in 2012 with the purchase of an electric car.

Michael Gillan said: "The best thing about the technology is how complementary it is; for example, we can't imagine having the electric vehicles without solar panels now, and what's the point in having these if your home is inefficient?"

BIOMASS

What: Equine specialists choose biomass solution

How: 48kW ÖkoFEN wood pellet boiler supplies energy to renowned stables

Result: Annual heating bills drop £2,000 to just £2,500

Equine Specialists jump to biomass heating solution

Established over 30 years ago by current owner Ray Owen's grandfather, the renowned trainer Edward Hollister Owen, Tyrnog Liveries at Llandyrnog in North Wales is dedicated to providing top-quality facilities for horses and their owners

The business today comprises a racing yard, livery for 21 horses and rehabilitation for 25 horses rescued by the RSPCA.

Ray called on local specialists Hafod Renewable Energy to upgrade his heating technology, and after a detailed survey of the premises and its requirements they recommended a 48kW ÖkoFEN wood pellet boiler, with the pellets automatically vacuum-fed from a moisture-proof FlexILO storage tank.

The boiler is housed in a central plant room and connected to a district heating system that serves the house and office. It also feeds a domestic hot water cylinder and radiators for the tack room. Overall efficiency of the system is now 92 percent, compared to the previous AGA/ boiler efficiency of just 65 percent.

Better still, as well as a clean, controllable heating system, the cost savings have been striking: In the first year alone, heating bills have dropped from £4,500 to £2,500, and the Owens have received RHI payments totalling £4,900.

Companies urged to 'offset' on-site energy generation

Companies with on-site generation should look to 'offset' any exportable energy they produce against the energy they purchase elsewhere in order to improve their overall energy portfolio returns.

This is the advice being provided by EnDCo, an independent licensed electricity supplier that provides business customers with direct access to the wholesale electricity markets. The company says that six-figure annual savings can be achieved for businesses with the right ratio of electricity consumption to generation that adopt the Offset Supply strategy, even at exported power levels as low as 1.5 megawatts (MW).

Andy Rice, Managing Director of EnDCo, explains: "For companies that can generate electricity, either at a single site or at multiple locations, a strategy for 'offsetting' any surplus generated power against the electricity consumption needed at other geographically dispersed premises can be a very attractive option. Furthermore, using this approach companies with an energy-generating plant in Scotland and an energy-consuming operation in Cornwall don't need an extension lead connecting the two locations to make this happen."

An offsetting approach is one which works best when a business operating at multiple premises is in a position to meet most of their electrical load from their own generation sources, or even better when that generation capacity exceeds the consumption requirement. The generation assets may be located at a single site or dispersed over multiple locations, but in either circumstances it is possible for the generated power to be used to offset the consumption at any number of other power-consuming properties.

In these situations, EnDCo enters into an agreement with the customer to allow all of its consumption to be offset by its own generation. If there is any residual generation after consumption needs are met, this would be sold into the wholesale market or conversely, if there is insufficient generation to meet consumption for any particular period, then additional power would be purchased as required to make up the shortfall.

Experts award top rating for storage system

SOLARWATT, the leading German pioneer of high-performance dual-glass solar PV energy production and storage systems, has been praised by leading European experts for the quality of its solar PV modules as the company develops its UK partnership network.

Stiftung Warentest, a respected independent consumer research organisation, awarded SOLARWATT's PV panels the highest grade in an initiative by the European Commission aimed at helping consumers choose suitable renewable-energy technologies. The recognition follows an earlier consumer accolade and comes as SOLARWATT starts bringing its advanced renewable-energy generation and management systems to homes in Britain.

Independent photovoltaic experts from European consumer organisations assessed the production of solar power-generation modules made by a number of international manufacturers. The study focused on the assembly and lamination of both individual cells and entire modules. Also analysed were pre-manufacturing control procedures and post-production quality inspection processes. In all categories, SOLARWATT received the highest possible rating of five stars.

Established in 1964, Stiftung Warentest has a considerable influence on consumer buying behaviours due to the German organisation's reputation for independent, reliable research. An earlier study published in September-October 2015 by Which?, the independent UK consumer group, awarded SOLARWATT the maximum five stars in each of four production categories and an overall five stars for manufacturing quality.

Pol Spronck, SOLARWATT's International Sales Manager, said: "We are very pleased to receive the Stiftung Warentest award as it confirms once again the high quality of our solar modules, with nothing left to chance during production.

"The quality and innovation in our components and production processes mean we can provide 30-year product and performance guarantees for our pioneering glass-glass modules. The latest generation of modules produced at our advanced production facility in Dresden feature two thin glass plates of 2mm each designed to be very light yet extremely durable and resistant to both environmental factors and corrosive substances such as ammonia and salt, while being highly transparent for the highest possible guaranteed energy production. Our virtually unbreakable glass-glass modules offer the market's best price-performance ratio.

"This is further expert evidence of our product quality following the Which? tests. While the results of the tests were no surprise to us, they provide further assurance for our customers. SOLARWATT products are tested repeatedly at levels exceeding international standards."

Through CLEAR – enabling Consumers to Learn about, Engage with and Adopt Renewable energy technologies – the EU aims to help customers make the right buying decisions when considering a domestic renewable and low-carbon energy technologies. Users can exchange information and experiences on products and solutions in an online community. Launched in March 2014, the scheme is designed to help achieve European climate change targets.

Windhager invests in the future of biomass heating

Windhager's PuroWIN boiler is aiming to set new standards in heating with wood chip with an innovative gasification process.

As well as offering uniquely clean combustion, the set-up is packed with fresh ideas and technology, such as being the first that can transport wood chip using a suction system.

The boiler, now available in the UK, is available in five performance levels from 24kW to 60kW.

Oli Duckworth, UK Windhager Director, explained that the company's research and development team started work back in 2009 to develop the PuroWIN and around 60 percent of the focus was on tackling the sticking issues that traditionally made wood chip as a fuel difficult to transport and handle.

He said the installers' reaction at a launch seminar was extremely positive, and added: "The whole room was really enthused by the work that has gone into developing this technology – it was really pleasing to see no doom and gloom and it shows that there is an appetite for innovation in the market.

"This really does set a benchmark for the biomass sector; there are so many USPs that resolve a lot of issues that have previously been problematic.

"We've closed the book and reopened it with ultra-low emissions, low-energy usage, lower maintenance needs alongside hyper reliability.

"This really does have the potential to be a game changer."

Salzburg-based Windhager claims that the latest addition to its biomass range will make wood chip heating uniquely eco-friendly, safe and efficient.

Plans to cut new onshore wind costs by more than 20%

Scotland's next generation of onshore wind projects could be at least 20% cheaper if Scottish and UK Governments work with industry and regulators to remove a series of barriers, a new report has found.

Onshore wind is already one of the lowest-cost forms of new electricity generation in the UK.

But a study released by Scottish Renewables shows that the industry could cut costs further – by more than £150 million a year.

That saving would come from making a series of changes including installing the latest wind turbines and extending the life of existing ones. The research, carried out by consultants Everoze on behalf of Scottish Renewables, also found that introducing a more flexible way of connecting onshore wind projects to the grid, and reducing the amount developers have to pay to connect, could save millions each year.

Lindsay Roberts, Senior Policy Manager for Scottish Renewables, said: "The cost of onshore wind has come down significantly over recent years, and it is now one of the most competitive forms of new electricity generation in the UK.

"This report shows that we can cut costs even further if government, industry and regulators work together to make sure we can use the latest generation of turbines on suitable sites, reduce grid charges, and deploy energy storage technologies.

"Deploying the latest generation of turbines has the biggest impact on costs, however, reducing them by £11/MWh.

"The report sets out just how competitive onshore wind in Scotland can be, and shows that it makes no sense for the UK Government to exclude the technology from long-term contracts for clean power. Without it, we will all be paying for more expensive alternatives."

Figure it out

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

	52 week high	52 week low	July price	Current price	
Drax Group (DRX)	451.30	205.60	350.40	307.70	↓
Good Energy Group	255.13	199.00	215.00	222.00	↑
Intelligent Energy	151.50	7.90	9.48	7.90	↓
ITM Power	36.45	12.09	16.44	24.25	↑
Leaf Clean Energy	43.00	22.00	41.75	43.00	↑
PV Crystalox Solar	13.72	7.78	10.94	13.72	↑
Rame energy	11.00	5.75		Suspended	
REACT Energy	9.00	2.00	5.00	3.80	↓
Renewable Energy Holdings	2.69	0.70		Suspended	
Rurelec	4.60	0.50	0.85	1.15	↑

Generation tariffs for solar PV

Tariff band	FiT rate (p/kWh) from 01/07/16 - 30/09/16	
< 10kW	Higher rate Middle rate Lower rate	4.25 3.83 0.61
10 - 50kW	Higher rate Middle rate Lower rate	4.46 4.01 0.61
50 - 250kW	Higher rate Middle rate Lower rate	2.09 1.88 0.61
250 - 1000kW	1.75	
> 1000kW	0.61	
Standalone	0.61	

* Currently subject to consultation

FiT deployment caps that have been reached in tariff period 01 (01 April – 30 June 2016)

Deployment band	Cap limit (MW)	Cap reached?	Date and time of final installation to qualify	Capacity deployed (MW)
PV <10kW	76.96	No	N/A	2.56
PV 10-50kW	25.72	No	N/A	0.859
PV >50kW	14.5	No	N/A	6.79
PV standalone	5	Yes	08/02/2016 01:15	12.79
Wind <50kW	11.17	No	N/A	-
Wind 50-100kW	0.3	Yes	08/02/2016 00:15	0.542
Wind 100-1500kW	6.8	Yes	08/02/2016 00:18	21.730
Wind 1500kW-5000kW	10	No	N/A	-
Hydro <100kW	1.1	No	N/A	0.135
Hydro 100kW-5000kW	9.5	No	N/A	-
AD (All)	5	Yes	08/02/2016 00:15	15.67

Generation tariffs for non PV technologies

Technology	Band (kW)	Tariffs (p/kWh)
Hydro	< 100kW	7.66
	100 - 500kW	6.13
	500 - 2000kW	6.13
	> 2000kW	4.43
Wind	< 50kW	8.39
	50 - 100kW	6.85
	100 - 1500kW	4.40
	> 1500kW	0.85

(Source: OFGEM)

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)	< 200 kWth	Tier 1: 3.26 Tier 2: 0.86	20
Medium biomass	Solid biomass: Municipal solid waste (inc CHP)	200 kWth and above, < 1000 kWth	Tier 1: 5.24 Tier 2: 2.27	20
Large biomass	Solid biomass: Municipal solid waste (inc CHP)	1000 kWth and above	2.05	20
Small ground source	Ground source heat pumps, water source heat pumps, deep geothermal	< 100 kWth	Tier 1: 8.95 Tier 2: 2.67	20
Deep geothermal			5.14	
Solar collectors	Solar collectors	< 200 kWth	10.28	20
Air source heat pumps	ASHPs	All	2.57	20

(Source: OFGEM)

Domestic RHI deployment

Technology	Accreditations (July 31)	% of total
ASHP	23,360	45
GSHP	7,332	15
Biomass	11,871	24
Solar thermal	7,831	16
TOTAL	50,394	100

(Source: DECC)

Number of MCS registered installers per technology

Technology type	Cumulative	Registered July 16
Solar PV	1922	3
Biomass	579	0
Air source heat HP	986	2
Ground source HP	696	0
Solar thermal	810	1
Small wind	56	0
Total	2619	23

(Figures supplied by Gemserv)

Number of MCS registered installations per technology

Technology type	Cumulative	Installed Jul 16
Solar PV	881,375	4,337
Biomass	17,020	25
Air source HP	48,668	443
Ground source HP	13,433	102
Solar thermal	8,603	32
Small wind	5,056	0
Total	955615	4778

Domestic RHI tariffs

Technology	RHI rate (from 1 July) (p/kWh)
ASHP	7.51
Biomass boilers	4.68
GSHP	19.33
Solar thermal	19.74

(Source: DECC)

My working week

Who are you? Jan Sykora, Technical Manager at Organic Energy

What do you do? Organic Energy, based in Welshpool, Mid Wales, specialises in wood pellet heating and is the sole distributor of ÖkoFEN wood pellet heating systems, Gasokol solar thermal products and Wodtke wood pellet stoves. Arriving in England from Slovakia 13 years ago with barely any English, Jan Sykora is now a trusted authority on biomass heating for renewables installers all over the UK.

Biomass expert calls UK his home

Monday
I usually get up just before 6am and check my emails on my laptop before leaving for work. My priority is to check nothing out of the ordinary has happened overnight that may impact on my packed diary this week. When I get into the office I spend the morning preparing for a lunchtime conference call for European technical managers with ÖkoFEN HQ in Austria.

Tuesday
A busy day fielding technical queries from installers by phone and email. I grab an hour to finalise plans for our installer training events on the new ÖkoFEN Condensing system. The ÖkoFEN Condens is the world's most efficient wood pellet boiler. We'll be showcasing its technical aspects and efficiency to renewables installers here in our Welshpool showroom throughout the autumn. Our installers understand the technological superiority and superb engineering for which ÖkoFEN wood pellet boilers are renowned and they rely on our knowledge and expertise when ground-breaking new technology like the Condens hits the UK market. I'm up until after midnight putting the finishing touches to my presentation.

Wednesday
I report on my presentation and autumn training events to our directors first thing. Together we work through the finer details of how we'll run the first full-day session for installers on the ÖkoFEN Condens. It is an awesome system designed and developed by the pioneer of wood pellet technology and ÖkoFEN founder, Herbert Ortner. Herbert and his son Stefan, ÖkoFEN's CEO, are rightly proud of the 99.5 percent efficiencies they have achieved with this advanced unit. My job is to ensure our installers grasp the technical aspects of the product. I really enjoy talking to installers and customers alike and simplifying what seems complex, but when you understand it is remarkable in its simplicity.

Thursday
A busy day helping installers with technical queries and preparing project details for a 56kW ÖkoFEN pellematic system for a large Oxfordshire livery stables. We provide wood pellet heating systems for a wide range of domestic and educational, as well as commercial, properties – anything from a modest Victorian cottage to smallholdings and school swimming pools. This is my fourth livery yard. I've learned the Brits really do love their horses!

Friday
We make plans for the weekend as we sit up in bed, chatting over coffee whilst I check my emails. Suzy and I have just bought our first house. A huge event for us. When I stepped off the coach at London's Victoria Station from my home in Slovakia as a 24-year-old 13 years ago I barely spoke a word of English. Tomorrow, we're unpacking a mountain of boxes, then off to buy a dishwasher. But today, I have an installation to oversee. Fortunately, this one is only 40 minutes from home. It's in a rural B&B, much like the one I first worked in when I arrived in the UK.

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