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Bittersweet symphony

It seems that nobody's short of a critical word or two on government policy these days, with the past month no exception as the Green Deal train trundles on towards its unknown destination.

What is perhaps different this time is that our elected representatives are getting in on the act and have joined the dissenting voices by labelling its own flagship policy a 'disappointing failure'.

Following hot on the heels of the questionable decision to close the Green Deal Home Improvement Fund, and thus one of the few well-subscribed elements of the scheme, confidence is again collapsing rapidly, expedited by the influential Committee on Climate Change's crushing verdict.

Strenuous efforts must now be made to prevent Green Deal joining the unenviable ranks of communism and perpetual motion as being grand in theory but rather less effective in practice.

To provide cash up front for energy efficiency measures was revolutionary, and expecting the consumer to pay it back not unreasonable. But attempts to get the public engaged were lacklustre as finance packages remained unattractive and marketing spend non-existent.

For the past 18 months, conversion rates have remained stubbornly low as increasingly healthy numbers of Green Deal assessments could not be turned into signed plans as cheaper finance mechanisms existed in abundance elsewhere.

Alas the Green Deal journey has not yet hit the buffers, and it will power forward in some new guise delivering manifest business opportunities to installers. Making energy efficiency sexy will always be tough, but offering a more accessible way for homeowners to save money and improve the fabric of their homes should not be.

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Editor: Paul Stephen
Sales director: Jonathan Hibbert
Circulation manager: Sandra Curties
Managing director: Nick Smith
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Advertising
Tel: 01565 626760
Email: jonathan@andpublishing.co.uk
Editorial/press releases
Tel: 01565 653283
Email:paul@andpublishing.co.uk
www.renewableenergyinstaller.co.uk

'It's time to look for new ways to sell energy saving to a reluctant public" Tasha Kasviner, YouGen p13

Events

Nextgen 2014
08-09 October Stoneleigh Park, Warwickshire
http://ebec.nextgenexpo.co.uk/

Solar Energy UK 2014
14-16 October NEC, Birmingham
http://uk.solarenergyevents.com/

Ecobuild 2015
03-05 March 2015 ExCel, London
www.ecobuild.co.uk

Heating & Renewables Roadshows
10 September 2015 Ricoh Arena, Coventry
15 September 2015 Westpoint Arena, Exeter
17 September 2015 FIVE, Farnborough
22 September 2015 RHC, Edinburgh
24 September 2015 Event City, Manchester
http://www.heatingandrenewablesroadshow.co.uk/index.php

Record breaking sales for Organic Energy

A Welshpool renewable energy company is celebrating record-breaking sales, with turnover up by more than £1 million in just six months.

June 2014 reportedly saw the company break all records for biomass boiler sales, and it has matched last year's revenue in only the first half of 2014.

Managing director Andy Boroughs says the hike in sales is due to a number of factors.

"Rising traditional energy prices, government incentives and a greater awareness of alternative heating systems have played a part in the growth of the renewable sector in the UK," he told REI.

"Many people distrust the big energy firms and are actively looking for an alternative to gas and electricity, and of course, oil is a major cost for homeowners heating properties which are off the gas grid.

"However, one of the major factors in the growth of our businesses has been the development of the technology, which means renewable systems are competing on price with traditional gas boilers."

Rising star: Andy Boroughs, managing director of Organic Energy, now employs three times as many staff as three years ago following a boom in renewable energy's popular appeal

REA sets out renewable manifesto

The Renewable Energy Association has issued its blueprint for the next government, which will become responsible for the UK succeeding or failing to meet its 2020 renewable energy targets.

Regardless of the makeup of the government following next May's general election, the REA has outlined some key 'manifesto asks' if renewable energy is to thrive as a major economic driver of jobs and growth.

MPs have been presented with copies of the REA Manifesto which asks the next government for:

1. Support for the Climate Change Act to keep us on course to meet our carbon commitments
2. A new renewables target for 2030 of 30 percent of UK energy
3. Backing of the ICCC's recommendation for a binding target for low carbon electricity by 2030
4. Funding for the RHI for new application beyond 2016
5. An increase in the UK's Renewable Transport Fuel Obligation to reach the 10 percent renewable energy target for transport by 2020
6. Reform to the EU's Emissions Trading Scheme

Energy secretary Ed Davey applauded the aims of the manifesto and said: "In government the Liberal Democrats have more than doubled renewable energy generation thanks to proper investment in the sector.

"But we want to do more and introduce a legally binding decarbonisation target to green our electricity and boost renewable heating.

"Pioneering work by the Renewable Energy Association's members is vital to achieving these goals."

REA chief executive Dr Nina Skorupska added: "Looking out to 2020, this manifesto sets out how the government can keep up the progress on renewable energy, and accelerate the roll-out of renewable heating technologies and transport fuels.

"Certainty beyond 2020 is also vital to enable industry to invest in innovation, expansion, skills and supply chain."

Kensa kicks off installer roadshow

Kensa Heat Pumps has taken to the roads of Britain this autumn to help installers better understand the benefits of ground source heat pumps and the RHI.

The Roadshow kicked off in Cambridge of 11 September and runs throughout October and November, before recommencing in February and March next year.

Kensa says the events will dispel myths surrounding GSHPs and address what impacts the RHI is likely to have on installers' customer bases.

The Roadshow is being supported by Plumbase Renewables, DECC and NAPIT and last three hours from 8.30am-11.30am.

Chris Davis, commercial director of The Kensa Group said: "We're really pleased with the response to our recent Installer Roadshow event in Cambridge. We saw a good turn out of MCS accredited installers, both those specifically interested in ground source heat pumps and those wanting to know more about the opportunities in the renewable heating industry in general.

"As well as getting a positive response from our mix of short seminars and practical product demonstrations, we also had an overwhelming number of sign-ups on the day to our new Underground Network programme. This newly launched scheme allows installers to tap into ongoing training, country-wide support and qualified new business leads."

He added: "The Cambridge event was the first of an 18 date UK tour that sees Kensa travelling over 2,500 miles across the country from September 2014 to March 2015, so we're looking forward to meeting more installers and getting the message out there about ground source heat pumps."

Installers can sign up for Kensa's Installer Roadshow Events by visiting: **www.kensaheatpumps.com/events**

Autumn watch: Throughout October and November Kensa is going on tour to dispel myths about GSHPs in a town near you

Date	Venue	City
Tues 07 Oct	City College	Norwich
Weds 08 Oct	Lincoln College	Lincoln
Tues 21 Oct	Manchester College	Manchester
Tues 04 Nov	PGL Training	Exeter
Weds 05 Nov	Kensa Heat Pumps	Truro

National survey raises energy awareness concerns

A national survey of 2,058 adults conducted by ComRes on behalf of the National Energy Foundation has thrown light on how little the British public knows about energy.

Significant findings include:

- Only half (50 percent) of those surveyed correctly identified which type of light bulb uses the least energy (LED) and 35 percent incorrectly thought that low voltage halogen lights use the least.
- Only one in ten (11 percent) adults say that they know how much energy their workplace uses; while eight out of ten believe that private employers (79 percent) and the government (76 percent) should provide training and education to teach the public to use energy more efficiently. This compares to the six in ten (57 percent) who believe that technology will solve our energy problems.
- Although three in five British adults (58 percent) say they feel well-informed about energy issues, the same proportion (59 percent) also don't know that the majority of the UK's electricity supply comes from fossil fuels.

The survey was commissioned as background to the launch of the National Energy Foundation's *Working together towards an energy-literate UK* programme.

Kerry Mashford, chief executive of the National Energy Foundation, said: "Improving the use of energy in buildings is the National Energy Foundation's overarching objective. Over the past few months, we've been giving some serious thought to the big energy issues facing the UK, with a view to achieving significant impact in terms of reducing energy consumption, improving energy security and reducing fuel poverty.

"These survey results confirm that action needs to be taken to inform and empower individuals. We're looking for support and feedback from potential partners to take forward a number of high-impact projects to improve the energy performance of new and existing buildings, and inspire others to do the same."

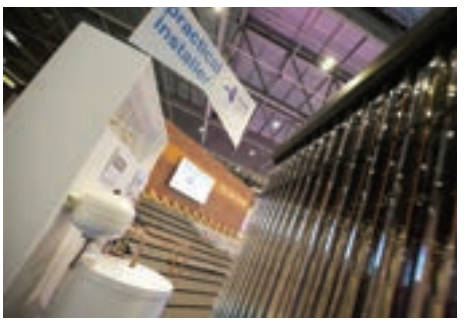
Practical Installer to become 'business hub'

Plumb Center's Practical Installer area will include a 'business clinic' for the first time at Ecobuild 2015 promoting opportunities across the biomass and heat pump markets

Acting as the business hub for Ecobuild's Energy Section, Practical Installer will feature centrally amidst innovations from across the renewables sector including, biogas/anaerobic digestion, biomass, CHP, geothermal, energy from waste, heat pumps, solar thermal, solar PV and wind.

Plumb Center's renewables specialists will be on hand to deliver tailored business advice to all installers – the seasoned MCS-accredited installer and gas installers keen to break into the green energy market.

"Working in partnership with Plumb Center will provide MCS and renewables installers with a more effective business model to turn around quotations promptly and accurately. Essentially, you're adding to your own team," said Tim Pollard, head of sustainability for Plumb Center.



Question time: Plumb Center's Practical Installer feature is back with a twist at next year's Ecobuild by providing a surgery for business-related queries

Plumb Center's team pledges to offer advice on optimising sales and marketing channels, policy, finance and best practices to integrate energy efficiency measures and renewable into new and existing client projects.

Based upon the principle of 'crawl, walk, run', Practical Installer is urging installers to bring along their questions and business challenges to receive on the spot feedback and guidance.

Alison Jackson, group director of sustainability & construction, Ecobuild said: "We are thrilled to announce the exciting plans for Practical Installer's return to Ecobuild next year (03-05 March 2015, London ExCel). Taking a day off to attend our event costs installers more than most, however, the business case to attend couldn't be stronger. Ecobuild is a must-attend event to receive the latest practical business advice coupled with the chance to touch, feel and play with the latest technologies and solutions from the world's most highly regarded manufacturers."

Viessmann celebrates 25 years in the UK

Viessmann has marked 25 years of operations in the UK at a celebratory event at the company's UK headquarters in Telford, Shropshire

The German, family-owned Viessmann Group opened its UK office in 1989 when a handful of staff was tasked with building a market for Viessmann cold rooms, freezers and commercial boilers.

Twenty five years on and Viessmann is now established as a manufacturer of domestic and commercial boilers and renewable heating systems.

Today, the company has 90 employees and says it trains approximately 2,500 installers, contractors, specifiers and architects on its products each year.

David Wagstaff, head of heat strategy at DECC, ceo and chairman of the Viessmann Supervisory Board, Prof. Dr. Martin Viessmann and councillor Malcolm Smith, the mayor for Telford & Wrekin joined employees, customers and other VIPs at a commemorative event at Hortonwood.

"A Viessmann UK strategy document from the early days creates a vision for a 'lean, clean and green' company; a 'one stop shop' for heating solutions and a market leader in delivering and training the industry in future technologies," said Graham Russell, managing director of Viessmann.

"I'm proud to say that in 2014, by sticking to our values in everything we have done, that is exactly what Viessmann stands for."

He added: "While Viessmann may not have been a household name in Britain back in 1989, we were still innovating back then.

"We are genuinely very excited about what Viessmann has to bring to heating innovation at what feels like a key time for our industry. Over the next 25 years, Viessmann will continue to be at the forefront of the transition from boilers, to hybrids, to heat pumps, to micro CHP and to fuel cells."

Staring ahead: Staff look forward to another 25 years at Viessmann and helping facilitate the mass move towards renewable technologies

In the dark on self consumption

Fresh academic research has shown that UK consumers with PV technology are often too focused on the financial benefits of selling the electricity they generate back to the grid when they could be using more of it themselves

The study, by the University of Durham as part of the Customer-Led Network Revolution (CLNR) project, found that solar PV owners were highly informed about their energy usage but that many were not aware they could be saving on their energy bills by using more of the power they generate in the home.

Dr Liz Sidebotham of Northern Powergrid, said: "We are investigating what's needed to support the UK's transition to a low carbon economy, where technologies such as solar PV, electric vehicles and heat pumps are commonplace.

"Our research has shown that solar PV owners tend to be the most aware and informed when it comes to energy usage. This leads to more active ways of relating to energy, whereby individuals engage in the calculation of their own consumption and generation, as well as in monitoring and managing their use to a greater extent than in other households.

"We also found that the uptake of PV is being driven by new conventions focused on investment, with owners focused on the potential financial returns that PV can bring, based on the logic of 'exporting' electricity to earn a return from the FIT scheme.

"Onsite use of power isn't widely recognised as a way to maximise financial benefits for PV owners, even though the cost of electricity proves that it's economically sensible for them to use as much as possible so they don't have to buy electricity from a supplier."

With greater use of renewable energy sources and the electrification of transport and heating playing a central role in government plans to cut carbon emissions by 80 percent by 2050, the CLNR project aims to help UK electricity network operators better understand and plan for the impact of solar PV and other low carbon loads on local electricity networks.

Export market: Greater knowledge is needed on the benefits of increased self consumption to not only save consumers extra money, but to lower the burden of costly upgrades to network infrastructure, a CLNR project has concluded

Traditionally, network operators have dealt with any new demands placed on the powergrid by reinforcing the network. CLNR is exploring smarter alternatives that will make the most of existing assets and defer the need for costly network reinforcement.

Dr Sidebotham added: "Solar PV has enormous potential as one of the most popular low carbon technologies in the UK and this study has provided us with some really interesting insights. For example, we have seen that by equipping PV owners with smart meters and in-home energy monitors they were able to better understand and manage their own energy use and generation.

"It gives PV owners the knowledge to help them cut their energy bills further and become even more energy self-sufficient, lessening the flow of PV-generated energy back onto the networks.

"This could be hugely beneficial to the UK electricity industry, allowing more PV to be installed without the need for investment in network infrastructure, helping the UK on its way to achieving its decarbonisation targets in a more cost-effective way."

The uptake of PV is being driven by new conventions focused on investment

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Managing Director BayWa r.e. Solar Systems Ltd

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Raising the roof

From 14-16 October the NEC in Birmingham will be hosting the **5th Solar Energy UK (SEUK)** - the UK's leading dedicated solar event

To celebrate the hard work of 3,100 installers operating in the UK, organisers have dedicated one of four features areas to installer-centred sessions. Supported by Gold Sponsor, Trina Solar and Supporting Sponsor, CCL Components, 'Installer Central Feature Area' is set to showcase the latest developments in energy storage, off-grid technology, voltage optimisation and rooftop mounting systems.

Sponsors will be running practical workshops on installing the most recent technological developments as well as tips and techniques on commercial strategies including up-selling for installers. Businesses can also get advice on developing propositions which highlight the possibility of retrofits and system tune-ups. Running alongside these practical workshops Ralf Martin Müller from TUV will provide updates on his ground breaking research into safety considerations when installing storage.

Organiser Solar Media's pre-show market-orientated research found that many installers felt strongly that standards and training bodies do little to support the installation industry. Key session 'What's next for MCS?' will run as a lively and interactive debate between installers and industry leaders with the aim of producing a constructive report to feedback to the industry. Feedback will also include Solar Power Portal's opinion poll which asks installers: To what extent do you agree with the following statement? 'Current installer standards agencies are supporting the progression of the UK solar PV industry.'

Looking up: SEUK's seminar programme will focus this year on penetrating the rooftop market

As the UK government and solar industry are pushing for increased rooftop deployment, the seminar programme will also focus on penetrating the rooftop market, securing commercial clients, the legal financial and planning issues as well as showcasing pioneering projects. Visitors have the opportunity to speak with c level professionals managing energy and sustainability of commercial companies and retailers.

Post SEUK, installers can look forward to next year's round of the Solar Energy UK Roadshow taking place in February 2015 at six locations nationally. The Solar Energy UK Roadshow is a series of half day seminars that provide an accessible and educational opportunity for installers, EPCs and distributors of solar products throughout the UK.

Following SEUK, the Roadshow will also be celebrating its fifth year of support for installers with the aim of showcasing the latest market, policy and technical information to ensure that solar SMEs can continue to thrive in the UK market. 2015 will feature; how to sell to and capitalise on the commercial rooftop market, how to stay ahead of pricing trends as EU anti dumping winds down, what impact will the advent of energy storage technologies have on the market and how can we as an industry influence end users to adopt more solar in their energy mix.

More information on the 2015 programme and bookings will be available in the comings months on **http://ukroadshow.solarenergyevents.com**

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‘Flawed’ Green Deal blasted by MPs

The government’s flagship energy efficiency scheme has ‘failed to live up to expectations’ with the first 18 months of its life ‘largely wasted’, a committee of MPs has concluded

The damning indictment of Green Deal came from the Energy and Climate Change Select Committee and its chair Tim Yeo MP in mid September amid chronically low uptake figures and nose-diving confidence from the supply chain.

Despite pledges from former climate change minister Greg Barker to have 10,000 households signed up to Green Deal by the end of 2013, in reality only 4,000 plans had been signed by the end of July this year.

The Committee acknowledged that the underlying principle of providing money up front for energy efficiency measures is an attractive proposition, but that the implementation of Green Deal had been flawed with finance packages too expensive and the Department of Energy and Climate Change’s (DECC) communication scheme inadequate.

The report concludes that although MPs remain supportive of the scheme, other financial incentives such as stamp duty discounts and council tax cuts are needed to boost the scheme’s appeal.

The report strongly urges DECC and the Treasury to give serious consideration to such ideas in order to revive interest in energy efficiency and unleash the scheme’s considerable potential to reduce carbon emissions.

Andy Buchan, founder of MCS and Green Deal accredited installation company Cotswold Efficient Energy Centre, said that DECC’s lack of consultation with the industry before launching Green Deal in January 2013 had left many in the sector disillusioned and contributed heavily to its lack of success.

“Now we have it from the horse’s mouth what many of us within the industry have known for some time,” he said.

“The concept of the Green Deal scheme is exactly what we need to get all those leaky homes insulated. But the problem as many of us know is that these schemes are launched too soon due to lack of the correct information.

Fatal attraction: A committee of MPs has called on DECC to urgently introduce alternative financial incentives following Green Deal’s failure to entice sufficient numbers of homeowners to make energy saving home improvements

“Many of these government schemes seem to be launched without consulting those who have been in the industry for many years and by tapping into this knowledge there would be a greater opportunity for success of all schemes including GDHIF and ECO.”

Consumer advice website YouGen said that Green Deal’s complexity had posed large problems in communicating the scheme to the public whilst high interest rates on loans discouraged customers from agreeing to Green Deal finance packages.

Tasha Kasviner, YouGen’s editor, added: “It is part of our job here to unpick the finer details of energy saving schemes and incentives for the benefit of householders. With the Green Deal it has proven to be a very difficult task.

“From Green Deal assessors and advice organisations to Green Deal reports and providers, a whole new language has been invented to describe it. This has only led to confusion and misunderstanding in the public.

“It is time to look for new ways to sell energy saving to a reluctant public. Let’s hope the Green Deal fiasco hasn’t turned the public off for good.”

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Way back when

Steve Wade, managing director of Wind & Sun, celebrates the 20th anniversary of the UK's first domestic solar power exported to the national grid

Following installation of a PV array at 'The Autonomous House' in Southwell, Nottinghamshire, the first electricity from a private household solar system was generated for the UK National Grid on July 27 1994. This was a major achievement for Wind & Sun and demonstrated the feasibility of harnessing the power of the sun.

Solar panels on roofs have since become a common sight around the country. A whole industry has grown up to service them, with installers in almost every town and payback times falling to in the region of five years.

The Autonomous House's solar panels have generated over 33MWh of electricity (enough to make a million cups of tea!) and have worked faultlessly for 20 years. On the 20th anniversary Wind & Sun re-visited the system to test performance.

According to the manufacturer's warranty, at this point in their life the panels should be putting out 80 percent of their initial value. We were astounded to find the first panel tested was producing almost 95 percent of its original rated power.

The house was designed and built by Brenda and Robert Vale along principles outlined in their book 'The Autonomous House' first published in 1975. The aim was to be self-sufficient in energy and water.

Wind & Sun were at first approached to supply an off-grid system using battery storage to power the house. However, providing reliable power throughout the year would have been difficult and expensive to achieve.

At the time grid connected PV was being developed in Germany as part of their '1000 roofs programme'. I met with SMA at a trade fair in Amsterdam where they were exhibiting 'grid connected PV inverters'.

We were astounded to find the first panel tested was producing almost 95 percent of its original rated power

SMA agreed to supply Wind & Sun and the local grid company (EMEB) were approached. They were supportive of the idea and agreed that if the inverter was good enough for Germany it was probably good enough for the UK and allowed the connection.

The PV system used a 2.16kWp array sited on a south facing oak frame garden pergola comprising 36x Solarex 60Wp polycrystalline modules and a SMA PV WR-1800 inverter – the first SMA inverter installed in the UK.

The house cost £155,000 including the PV system whose installed cost was £6900/kWp with a module cost price of £4.40/Wp. This equated to a 200 year payback time!

The inverter was replaced in 2009 with a more modern version (Sunny Boy SB-2500), but with this exception the system has worked faultlessly now for 20 years.

The progress we have made in the last 20 years has been exceptional and it is amazing to see more and more solar systems appearing everywhere thanks to the vision of some pioneering individuals. We expect that this system could be producing for at least another 20 years.

Solar is now firmly established as a mainstream energy source and we can now look forward with confidence to a sustainable future.

First place: The UK's maiden domestic PV system exporting to the grid is still performing at 95 percent efficiency, according to Wind & Sun managing director, Steve Wade

VISIT STAND P2 AT SOLAR ENERGY UK FOR THE BEST PV SAFETY SOLUTIONS

14-16th October at the NEC Birmingham

FROM DC DISCONNECT TO ARC FAULT DETECTION

PV systems nowadays typically are more powerful then a few years back. The increase in power also means an increase in PV related risks and thus an increase in the demand for PV safety solutions.

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Making introductions

MCS looks forward to next year's roll out of the Energy related Products directive

Things have been hotting up for the heat industry. 2014 saw the launch of the much anticipated Domestic RHI, and in 2015 The Energy related Products (ERP) directive will be introduced from 26 September.

The ERP will affect all heating and hot water products with an output equal to or less than 400kW, and will comprise of two directives: Ecodesign and Energy Labelling.

Ecodesign will set minimum energy performance and environmental criteria for energy related products. Energy Labelling will see the introduction of a label with an efficiency rating between A+++ to G.

Therefore, with the proposed directive the MCS Heat Pump Working Group have decided to update the heat pump standard, so that it can be in align with the ERP directive. In order to achieve this a sub-group has been formed to look at ERP requirements, and propose any updates to MCS requirements.

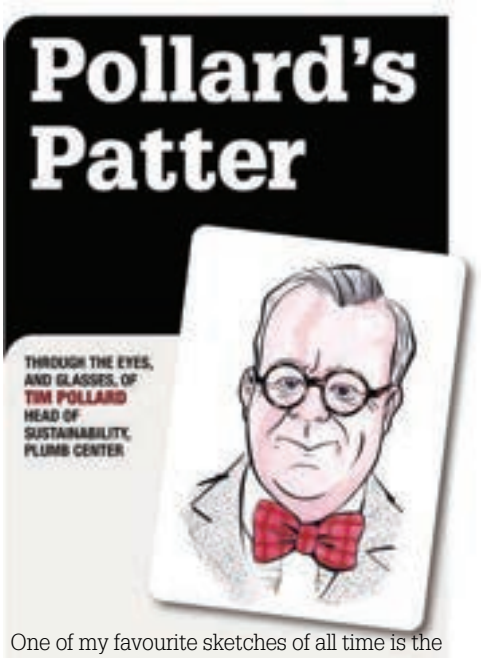
In addition, MCS have proposed two modifications to MIS3005. These include an update to the guidance document on calculating the heat extracted from the ground for thermally activated heat pumps and a new requirement for installers to enable weather compensation.

The proposed changes to the heat pump product standard are outlined in MCS issue 3.0 (draft version, ref to MCS 007). The proposed requirements will predominately focus on the requirements for electricity driven air, ground and water source heat pumps. Additional work is being carried out to understand further how to apply ERP requirements to outdoor swimming pool, gas absorption, and solar assisted and hot water heat pumps.

MCS welcome comments on the current proposals and also feedback on how ERP requirements should be applied to the additional technologies listed above.

A list of the proposed changes to MCS 007 can be found on the MCS website under the Consultation section. We invite everyone to read in detail the proposed changes and provide us with any feedback.

www.microgenerationcertification.org



One of my favourite sketches of all time is the attempt by Father Ted to teach Dougal the difference between dreams and reality. For many years some of us have been dreaming of the day when renewables will be taken seriously as an energy source. I am delighted to say that I believe that dream is becoming a reality.

The latest DECC energy statistics show that renewables' share of generation increased from 11 per cent in 2012 to a new record 15 per cent in 2013, and that low carbon electricity's share of generation increased from 31 per cent to 35 per cent.

In addition, the UK's cumulative capacity of PV deployment has now reached 5GW, another significant landmark. The total number of sub 4 kW solar PVs registered on the MCS database is now over 540,000. Sub-50kW PV installations represents 84 per cent (2,079MW) of total PV installed capacity and 99 per cent (571,077) of the total number of PV installations.

We have already seen a very encouraging start to the domestic RHI scheme, particularly in off-gas grid areas. Similarly the non-domestic scheme is really getting some traction after a slow start, despite some remaining issues with the application process.

So whatever technology may be your area of interest, we can look forward to continuing growth as the realisation grows amongst all stakeholders that renewables can provide a perfectly practical and economic alternative solutions for all concerned. **Congratulations!**

TECH TALKING

The importance of good insulation

Heat pump expert **Bob Long** focuses this month on the vital importance of correctly installed insulation material

Thermal energy is generally invisible to the eye and the 'out of sight - out of mind' mentality often plays a strong role in the poor standard of insulation regularly encountered in the field.

I am no expert in building construction, and there are many structural factors to consider when choosing the ideal insulation medium, but some basic rules apply to all installations.

When insulating exterior/interior walls, the insulation must be cut to size and fitted with sufficient accuracy to create an air-tight integrity. Insulation should never be fitted or subjected to damp conditions and in all cases, any form of thermal bridging is to be avoided.

Insulation should always have a vapour-barrier on the warm-side to stop any ingress of moisture. If moisture enters the fabric of the insulation material, thermal integrity will be ruined.

Most of us are aware of these rules, but maybe not fully understanding why they are so important.

Moisture will always target a colder surface, so in the example of a dwelling, warm humid air inside the property is able to find its way to the cold-side of the insulation through any air gaps, sometimes created by poor fitting practices. Moisture carried by the air reaches dew point at the cold surface and creates a layer of condensation, which in time can enter the insulation material and ruin its thermal integrity by creating a conduit for heat transfer, sometimes referred to as a 'thermal bridge'.

If vapour seals are not effective, over a period of time the insulation material will become moisture laden, providing a thermal bridge between the warm interior and the cold exterior.

Where the heating apparatus is located externally to the insulated space, such as an air source heat pump in the garden, or perhaps a biomass boiler or ground source heat pump located in an uninsulated garage, it is important that supply and return pipework is insulated to a very high standard.

Pipe insulation comes in a number of forms but the most common is pre-formed tubular sections, available in a number of materials. In all cases, the pipe insulation should be chosen specifically for the pipe size in question and should fit snug with no air gaps.

If pipes are to be buried in ground, outer surfaces must be provided with a waterproof barrier to protect the insulation from ingress of moisture.

Understanding the importance of high performance thermal insulation, and the care with which it is applied, is key to a successful installation. And although there are many 'sizing templates' available in the industry to calculate the heat load of a property, none can account for the negative results of badly installed insulation, or U values, degraded by time.

When calculating heat loads for older properties, or properties that have been insulated some time ago, it is always advisable to allow a larger safety factor as insulation integrity will reduce over time.

A retrofit installation can be can be evaluated quite accurately by fitting an energy meter into the supply pipe of the existing heating system, and by measuring the actual energy required to successfully heat the home (This test should ideally be carried out over the coldest months of the year).

A comparison should then be made between the calculated heating requirement and the factual result. If there is a significantly large discrepancy in the results, it may be necessary to look closer at the existing insulation and increase its thermal efficiency by replacement or external/internal cladding. There are numerous ways to solve an insulation problem, but realisation that a problem exists is often more difficult.

CURRENT AFFAIRS

By guest columnist **Bill Wright**, head of energy solutions, Electrical Contractors' Association

There has been a recent consultation from DCLG to extend permitted development up to 1MW for rooftop solar PV. This would mean that a large proportion of PV systems on commercial roofs would not need planning approval. If you think about the large area of rooftops there are in the UK, the potential is clearly huge for PV systems. Many supermarkets and warehouses have very large underutilised roof spaces.

There are still some obstacles to overcome, the uncertainty over the PV Feed-in Tariff, the requirement for an EPC level D and all the legal complexities over ownership and maintenance rights over the roof still have to be overcome. However this consultation has definitely pushed solar PV in the right direction. In the year ending June 2014 there was just 65MW of solar PV installed on commercial roof tops, a very small amount when you consider the potential.

The government has set high targets for the installation of solar PV and rooftop development seems a very good way of achieving this as there will be little opposition such as that now being made against solar farms.

If you are interested in the consultation, even though the final date for leaving feedback was before publication of this article, the link is: **http://tinyurl.com/q4p3fzv**

Empowerment of sheep

Steve Pester, BRE, introduces The National Solar Centre (NSC) and National Farmers Union's (NFU) newly released guide: *Agricultural Good Practice Guidance for Solar Farms*

This colourful guide is a welcome addition to the growing list of guides from the NSC stable (wonder why the horses are so good at writing these things?)

The guide complements the earlier works: *Planning guidance for the development of large scale ground mounted solar PV systems* and *Biodiversity Guidance for Solar Developments*. All are available free on the NSC website (address below). A quick summary of some of the key points in the new guide is given here for those of you who are too lazy to download and read the whole thing.

The guide mentions that planners like mixed use solar farms, so if a grazing plan can be included, that is a definite tick in the box. The guide therefore centres around the management of small livestock on solar farms.

Top-down management techniques seem to work best – we tried empowering sheep, but it just caused a stampede and blew the fuses. Cows and horses can throw their weight around and turn your solar field into a scrap yard, so unless you see an opportunity in PV salvage, probably best not to go there. Pigs and goats will eat anything, so self-roasting techniques are possible, but you will need to keep replacing the DC cabling. Free-range poultry is ideal as geese can make good security guards and chickens, even with MPP trackers fitted (maximum pecking power) are unlikely to total your cables. Bees are also ideal as they will add to the biodiversity of the site by 51.345 percent (source: Solarbuzz [maybe]). Even bats can be an integral part of your solar system – you only have to watch them sleep to see that they are inverter experts.

Actually, there is quite a bit more in the guide than I have alluded to above:

- -Conservation grazing for biodiversity
- -Agricultural grazing for maximum production
- -Solar farm design and layout
- -Eligibility for Common Agricultural Policy support and greening measures
- -Long-term management, permanent grassland and SSSI designation
- -Evidence base and suggested research needs
- -Good practice in construction and neighbourliness
- -Agricultural case studies

So, to get the full picture, it may be best if you download and read the real thing: **www.bre.co.uk/nsc**

Two minutes with . . .

Who are you?
Jason Hobson, managing director at Gledhill

What do you do?
We're a British manufacturer and family-run firm that specialises in both copper and stainless steel cylinders. Founded more than 90 years ago, we've developed a large product portfolio over time that includes energy efficient and renewable compatible cylinders and thermal stores.

Where are you?
Our HQ is in Blackpool and we also have ten manufacturing depots across the UK.

How's business at the moment?
Business is going well. We've launched a number of new products this year, and growth in renewables is gathering pace, particularly since the launch of RHI. In addition we've recently opened a new depot in Luton which is our biggest yet.

How could business be better?
I feel it would be helpful if the government promoted the potential energy savings which could be achieved by people changing old inefficient cylinders to new highly insulated ones with the latest heat exchangers and technologies.

What's the best business advice you've ever received?
Focus on both quality and service, as well as innovation in product development. These values are all key ingredients in the success of Gledhill.

How are you going green?
In the past few years we have developed our products to utilise more recyclable materials. In addition, flat sheet copper material is delivered to our nationwide depots to be manufactured on site, which allows us to reduce the amount of deliveries, and as a result reduce our carbon footprint.

Q&A

Jordan Mawbey

EvoEnergy

What have you got planned for the next 12 months?
Our immediate priority is to continue growing our business beyond the December FiT reduction and into 2015. Although we're not expecting the same 'peak and trough' effect that we've come to associate with previous FiT changes, it's still at the forefront of our immediate business plan.

Beyond that, we're planning to expand our product range so we can offer our customers a wider choice of renewable and energy efficient technologies.

What do you see as the growth area for renewables?
We're predicting huge growth in the >10kWp sector for the year ahead with continued growth in the >50kWp sector as well. The tax incentives now open to firms choosing to install solar are such that it makes good business sense, so we're planning for a big rise in commercial enquiries as a result.

How is your company cutting its carbon footprint?
Transport is a big focus of ours right now. We've been using more energy efficient vehicles to travel to and from installations for a while now, but have recently added vehicle tracking to our fleet to further reduce fuel consumption.

Aside from that, the little changes we're implementing are making a big difference - like the decision to encourage our teams to move closer to paperless working by reducing their printing by 50 per cent.

Jordan Mawbey is marketing manager at EvoEnergy

Talking point

Liz MacFarlane, Zenex Solar, urges the PV industry to move its sales pitch away from its traditional over-emphasis on the Feed-in Tariff

Zenex customers will know that I'm an advocate of selling PV based on energy cost-saving rather than Feed-in Tariff benefits.

We make a rod for own backs by hinging everything in a sales call on FIT return. Increasing utility bills are a certainty and this message gives the industry stability rather than FIT-driven peaks and troughs. FIT should be the icing on the cake, not the main message.

So it was with interest that I read about a recent study led by the University of Durham (page 8). This showed that Brits with PV are too focused on the financial benefits of their installations, wrongly believing that exporting energy provides maximum benefit.

The study claims that owners are undervaluing the financial benefits of consuming energy generated onsite.

Realisation that actual use of self-generated energy, rather than export, is the biggest win will be more obvious to those with Smart meters and this in turn seems to lead to better energy efficiency measures in the home.

The rush to install a system before the next FIT degression is still with us, and this can only be a phenomena caused by the industry's sales teams stacking their final close on this argument. Unfortunately, the wider impact is that the message passes between neighbours that PV "isn't the investment it once was."

I've lost count of the number of dinner-party conversations I've had about this not being the case. "The ROI is just as good as it was," I say over coffee "Thanks to increasing energy bills, lower kit prices, improvements in technology….." you know the drill. Needless to say, my dinner party invitations are waning.

Don't forget to come and see us at Solar Energy UK, NEC, 14-16th October, stand C10. We're excited to be showcasing the new SolarEdge JA Solar embedded module.

What lies beneath

Neil Young, indoor climate applications manager at Uponor UK, talks through the top UFH questions and sets the record straight

Can you use UFH beneath carpet?

To get the best out of your UFH system, it's important to remember resistance values in order to get the greatest benefit from the installation. We would advise a maximum TOG rating for underlay of 1.0 and carpet 1.5 when planning the floor covering.

Can I install UFH beneath ceramic tiles or timber floor coverings?

Ceramic tiles are actually the best floor covering for UFH, as the material is a natural convector of heat. If you are installing a timber floor covering however, we would advise always checking with the floor manufacturer what the maximum floor surface temperature is; to ensure that it is suitable.

Is it true that UFH is only suitable for new builds?

New build properties have the benefit of being built to high air tightness standards which means two things; minimal heat leaks out and very little cold air gets in. Older properties can still benefit from UFH but the energy efficiency returns will be a little less.

What is the most suitable location for the manifold?

Ideally the manifold should be located in a central place to ensure minimal pipework runs. This may be the airing cupboard, the downstairs closet or even the garage; whichever is the most central.

What is the best heating source to combine with UFH?

You can combine UFH with a variety of heating sources as long as suitable controls are fitted to regulate the temperature flow. UFH will work with a variety of heat sources and is ideal when partnered with low carbon solutions such as ground or air source heat pumps, as the low water temperatures will result in the greatest performance from the heat pump.

Reviewing the RHI

Robert Burke, HETAS, considers what the domestic RHI has achieved in its first six months

It's been over six months since the launch of the government's domestic renewable heat incentive (RHI). The big question is has it been a success so far for our industry? It seemed that we were waiting for it to happen for so long that people may have lost faith and not been ready. However, figures from OFGEM show that the initial take up has been as expected, with around 25 percent of the first 1,000 applicants choosing biomass boilers or stoves.

The vast majority of RHI applicants were using oil before switching to renewables. No doubt the lower running costs and carbon credentials of biomass were key factors in the decision making process. For customers using oil the switch to biomass is a straightforward one, made even better with the addition of RHI payments. In many cases a biomass boiler will have a similar footprint to an existing oil boiler, and the space used for an oil storage tank can be replaced by a pellet store. For engineers who are working in rural areas, offering customers an upgrade from oil to biomass can open up new business opportunities.

There is growing evidence of the financial benefit to becoming MCS registered

As the only scheme specialising in solid fuel and biomass, HETAS has seen a marked increase in the number of businesses applying for registration with the Microgeneration Certification Scheme (MCS). The range of HETAS training courses available at a choice of centres around the country gives installers with experience of gas or oil the opportunity to add renewable skills to their portfolio. Feedback from businesses who have already registered with the HETAS MCS scheme indicates that their investment is now paying off as demand for renewable heating installations increases. This is mainly driven by the domestic RHI, for which MCS registration is required.

However, many MCS registered businesses perceive that the current level of consumer awareness of the RHI is low, but counter this with the opinion that a steady and controlled uptake is more manageable. If the level of demand for renewables increases at a progressive rate rather than a deluge, it will enable businesses to establish a long term plan for renewables. The Department of Environment and Climate Change (DECC) has started a campaign of consumer advertising which will also stimulate demand for renewable installations.

The message that HETAS is getting back from MCS registered businesses is that their investment is now starting to pay off. Many of them have been registered for several years before the RHI was introduced. An increased level of enquiries and financial gain were two of the main benefits outlined by businesses who have become MCS registered with HETAS. For the first time since the RHI was launched there is now growing evidence that there is a financial benefit to becoming MCS registered.

The level of MCS support for installers includes a domestic RHI payment calculator to help installers and prospective customers work out how much they might receive under the scheme if they switch over to

For customers using oil the switch to biomass is a straightforward one

renewable technologies. There are also many MCS approved products available on the market. Biomass boilers and stoves with boilers must also have an emissions certificate to qualify for RHI payments, and HETAS maintains the database of products with these certificates, of which there are now 700 listed online at **www.rhieclist.org.uk.**

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The winner takes it all

Over 300 of the industry's leading figures assembled at The Kensington Roof Gardens on Friday 26 September to celebrate the winners of this year's Energy Efficiency & Renewables Awards

Hosted for the first time by A&D Publishing, publishers of REI, the 13 winning projects, installers and products were announced by comedian Marcus Brigstocke.

REI editor and judging panel member Paul Stephen said: "We were inspired by the number of outstanding entries and the process of selecting our shortlist and winners was a challenging one.

"My congratulations go to all this year's winners who so ably demonstrate the strength and depth of talent this sector has to offer."

The winners are:

Contribution to Energy Efficiency & Renewables

Sponsored by NICEIC

NHS Ayrshire & Arran

L-R Brett Forster (NICEIC), Alastair Kay (NHS Ayrshire & Arran) and Marcus Brigstocke

Energy Efficiency and Renewable Awards

Commercial Project of the Year
Sponsored by The Sustainable Energy Association

Plas Newydd (Stiebel Eltron)

L-R Dave Sowden (SEA), Chris Livesley (Kimptons), John Felgate (Steibel Eltron), Dave Gore (Kimptons) and Marcus Brigstocke

Residential New Build Project of the Year
Sponsored by HETAS

Kingston Heights (Mitsubishi Electric & NHP Leisure Developments)

L-R Alun Williams (HETAS), Stuart Bell (Mitsubishi Electric) and Marcus Brigstocke

Residential Retrofit Project of the Year
Sponsored by The European Energy Centre

The Hedgerows (Wrekin Housing Trust)

L-R Paolo Buoni (EEC), Gary Komora (Wrekin Housing Trust) and Marcus Brigstocke

Green Innovation of the Year
Sponsored by YouGen

Altherma Hybrid Heat Pump (Daikin)

L-R Gilly Jones (YouGen), Iain Bevin (Daikin) and Marcus Brigstocke

Biomass Installer of the Year
Sponsored by Windhager

The Wood Heating Company

L-R Adam Hart (Heating & Renewables Roadshow), Simon Cross & Maddy Stuckey (TWHC) and Marcus Brigstocke

High Efficiency Boiler Installer of the Year
Sponsored by CORGI Vat Saver

Shackleton & Wintle
TSG Building Services (highly commended)

L-R Paul Stephen (REI), Robin Heffter (Shackleton & Wintle) and Marcus Brigstocke

Energy Efficiency and Renewable Awards

Solar Thermal Installer of the Year

Sponsored by the Centre for Alternative Energy

Glevum Heating

L-R Kit Jones (CAT), Glenn Smith and Andrew Crookes (Glevum Heating) and Marcus Brigstocke

Solar PV Installer of the Year

Sponsored by SMA

Evo Energy

L-R Jan Van Laethem (SMA), James Sutton (Evo Energy) and Marcus Brigstocke

Air Source Heat Pump Installer of the Year

Sponsored by Mitsubishi Electric

Glevum Heating

Finn Geotherm (highly commended)

L-R Russell Dean (Mitsubishi Electric), Glenn Smith and Andrew Crookes (Glevum Heating) and Marcus Brigstocke

Ground Source Heat Pump Installer of the Year
Sponsored by REHAU

Geowarmth Heat Pumps

HD Services (highly commended)

L-R Steve Richmond (REHAU), John Withers (Geowarmth) and Marcus Brigstocke

Commercial Installer of the Year
Sponsored by Stroma

Rural Energy

L-R Andy Sharp (Stroma), Paul Clarke (Rural Energy) and Marcus Brigstocke

Energy Efficiency & Renewables Installer of the Year

Sponsored by City Plumbing Supplies

TSG Building Services

L-R Andrew Hart (CPS), John Holloway (TSG) and Marcus Brigstocke

Zero to hero

Finian Parrick, managing director of Zero Carbon Future, brings REI up to speed with the company's recent expansion and new installer offering

REI: What services do Zero Carbon Future currently provide to the renewables sector?

FP: ZERO is a complete design and supply solution for today's renewable energy installers. Established in 2011, ZERO services the UK from its Exeter headquarters, working at the forefront of innovative technology, offering premium carbon neutral heating products, from biomass boilers to heat pumps and solar thermal systems.

Our company's vision is to excel at every level – seeking out the best manufacturers, providing our installers with top-notch skills and support, offering bespoke design and expert engineering to give an unparalleled service.

Growth spurt: Already three years' old, Zero Carbon Future has nurtured its nationwide network of over 200 installers and continues to expand rapidly owing to strong demand, reports managing director Finian Parrick

Can you tell us more about the recent rebrand?

Renewable technology moves rapidly and ZERO's fresh look better reflects what sets us apart from the rest.

As a qualified heating engineer with MCS accreditation and 15 years' experience, I understand the nuts and bolts of this industry, and installer feedback helped us improve our system. Installers can quickly find what they are looking for via our slick 'brochure' style website, which is compatible for smart phones too – great for 'on the go' installers.

Our rebrand goes far deeper than new graphics. As the installer network evolves, ZERO continually develops to incorporate the latest technologies. We provide our valued installers with all the essential training, design and technical support to enable a seamless installation.

How is business faring in the current economic climate?

In response to the strong surge of interest in renewable technologies across the UK, ZERO has experienced phenomenal growth over the last three years. ZERO has recently expanded, taking on eight new members of staff and moving to a larger site, and our network of installers already reaches over 200 nationwide. We aim to become the UK market leader.

What is unique about the company?

As pioneering providers of renewable energy systems, ZERO combines expertise and vast experience with the best technology. We genuinely want to help our installers contribute to a more sustainable future and ultimately generate a zero carbon legacy.

One size doesn't fit all. With our dynamic, holistic approach, we adapt quickly whether it's a large-scale commercial project or a smaller domestic installation. ZERO's friendly in-house team includes specialists in computer-aided design, heating systems and mechanical engineering who create the customer's chosen renewable heating system to deliver optimum performance.

We take pride in selecting suppliers not just in terms of quality of product, but also in terms of minimal environmental impact. ZERO is the sole supplier of hi-tech Heliotherm heat pumps and one of only two UK distributors of Fröling biomass boilers.

How does Zero Carbon Future work with installers?

We're a nationwide one-stop shop renewables company, selling all the necessary ancillary parts, so you can order everything you need direct from us. But ZERO doesn't just stop at supplying great kit from leading manufacturers.

Support is fundamental. ZERO's informed technical helpdesk are available during extended office hours for free advice on energy-saving technologies or to schedule an on-site visit to troubleshoot…just say the word.

Our comprehensive, hands-on training packages are second-to-none. Our installers learn how to install and service state-of-the-art Fröling biomass boilers with our enthusiastic renewable energy specialists, and discover how to design and specify systems. Plus ZERO's free design service for new build and retrofit applications provides installers with technical drawings, detailed installation manuals and easy-to-follow user guides.

Tackling the deficit

Kevin Dowd, network operations manager for the National Skills Academy for Environmental Technologies, explains the central role installers can play in educating end users in light of a recent survey which reveals a worrying consumer knowledge gap

The Energy Saving Trust's findings make for interesting reading and clearly demonstrate a positive mood with regard to renewables; including the fact that 47 percent of householders would like to know if their home is suitable for renewable measures, and 59 percent stating they'd be more inclined to consider buying or renting a home that included renewable energy systems.

Despite the interest, knowledge of the schemes that would actually help these end users realise their renewable aspirations was considerably lacking with 83 percent of respondents unable to correctly identify the RHI. While negative, it provides a real opportunity for installers to educate potential customers.

Teaching aids

While you may be an excellent installer, coaching customers through the whys and wherefores of renewables and the associated government incentives, may not be something that comes naturally to you. There are a wealth of resources out there that will assist in breaking this information down into a language and level that the average non-technical consumer can understand and, by seeing these facts on the screen or in print, it will add credibility to what you are saying – there may still be those who believe it 'too good to be true.'

Sound advice: With interest in renewables high but understanding much lower, installers must focus more on educating potential customers in order to convert a growing number of leads into hard cash, explains Kevid Down, NSAET operations manager

Of the free and reputable resources out there, the Energy Saving Trust's website is a great place to start.

When sitting down with a customer, having some sort of physical reference material to look through that can also be left there will help them digest the information. Many of these are downloadable from our website.

The trick when educating end users is to pitch at the right level – you don't want to patronise and some keen eco-warriors may already have a reasonable understanding.

Creating case studies will certainly help to provide a 'real' point of reference – Joe Bloggs did this and is now earning/saving this.

If you have a website, why not include some of this information on there? When talking to customers you can refer them to it and it will present you as helpful and professional.

Your responsibility

If you've invested in training and joined the MCS register, then it's important that you take steps to make this investment worthwhile for your business. There are interested customers out there but many of them don't know how to 'go green' or the full extent of the benefits they stand to make from this move.

You have an opportunity to help educate people and the result of doing so can only be beneficial to your business.

Downloadable guides

The National Skills Academy for Environmental Technologies has a range of guides that are available to download from its website; either to print out or go through on screen with your customers.

Energy Efficient Homes and Environmental Technologies includes simple and comprehensive descriptions of the main renewable technologies and how they work, tips to save energy, plus information regarding the Green Deal, RHI and FiTs.

Introduction to Environmental Technology Systems supports a Level 3 qualification and can be used by installers wanting an overview of the main technologies before they make a decision about upskilling. From a consumer perspective, this should be pitched at end users interested in comprehensive information.

To purchase these guides, visit: **http://www.nsaet.org.uk/shop/**

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www.renew-ability.co.uk

Levelling the playing field

The business case for large ground source heat pumps has just got better, says **Colin Bland**, Viessmann's sales manager renewable energy systems

The arrival of the commercial RHI and the requirement for many building developments to incorporate renewable energy sources has seen the interest in renewable heating products, such as heat pumps, spread to a wider variety of commercial customers. Changes to the RHI tariffs from April 2014 have, by and large, now created a much welcomed parity between biomass boiler and heat pump incentives, rebuilding the case for larger ground source heat pumps (GSHP).

Size matters: The appetite for higher output GSHPs has improved markedly since the commercial RHI tariff was increased in April this year, says Colin Bland, Viessmann

New rival

Previously, large heat pumps, defined as those over 100 kW, attracted 3.5 pence per kWh, whilst biomass up to 200 kW received 8.6 pence per kWh for the first 1314 hours and then a further 2.2 p. No wonder biomass has taken off in the last couple of years.

Now, however, heat pumps receive 8.7 p/kWh and then 2.6 p when they hit the second tier level. This contrasts with biomass systems above 200 kW where the tariff was reduced to 5 p/kWh for the first 1314 hours and then a further 2.1 p after that. Consequently the tariff change has translated into a marked increase in interest in larger ground source heat pumps. The revised rates apply to installations accredited with Ofgem after 21 January 2013.

Demanding audience

The first orders of Viessmann's new range of Vitocal 300-G Pro brine/water heat pumps, offering outputs from 93 kW to 240 kW with CoPs to EN 14511: up to 4.9 for brine 0 °C/ water 35 °C, are now on their way to some diverse applications from stately homes to poultry farms. This heat pump is a response to demand for higher, more varied outputs and so the maximum output of this product can be increased almost five times, to 1,200 kW when used in a cascade.

The Vitocal 300-G is the first of its kind in the UK to allow customers to monitor product performance with new integral energy statement facility. This unique feature monitors the unit to provide a diagnostic on how well it is performing, reporting details such as the kWh produced by the heat pump and the electrical kWh needed to run it.

Inspiration came from Germany, where customers use the controls to match the longer-standing government payment tariffs to energy output generated. While in the UK the feature may prove helpful in providing supportive evidence for the meter-measured RHI, its key benefit is in highlighting any problems in the system through comparison to historic performance figures, as it automatically illustrates energy usage and production figures and CoP achieved; and cutting maintenance costs and energy wastage as a result.

Quality first

Interested businesses should be careful to check the heat pump and system efficiency and what equipment is included in the price; for example things like controls with the capability to offer remote monitoring and operation.

GSHPs are considered complex and take time and planning and as with any technology in a growth phase, we don't want to see the industry jump on a bandwagon and return poor quality installations from a shaky skills base.

Changes to the RHI have created much needed parity between biomass boiler and heat pump incentives

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Prevention better than cure

Diana Popa, Europe sales manager and UK spokesperson for Vergnet, outlines why a proactive operations & maintenance service (O&M) could cut costs and protect your customers' wind turbine investment

Statistics published in the European Wind Energy Association's (EWEA) 'Wind in Power 2013 Report' reported that wind power accounted for 32 percent of total 2013 power capacity installations, making it the most installed renewable technology in Europe. The UK is playing a key role in this growth with medium scale wind energy, with over 20,000 small wind systems having been installed on farms and land across the country since 2005.

In order for medium wind turbines to fulfil their potential, for the farmer, landowner or investor and for our energy future, it is essential that the importance of good Operations and Maintenance (O&M) planning is highlighted.

Preservation society: Operations and maintenance services are of critical importance in protecting rising levels of investment in wind, argues Diana Popa, Vergnet

The investment in a wind energy project is important; both financially and in terms of time taken to design and customise the turbine to best adapt it for the local environment. Whilst these initial costs are often considerable, attention must equally be given to the planning of maintenance for your project.

Planning maintenance can ensure that significant costs are not incurred at a later stage in your turbine lifespan.

Vergnet has a 25 year track record in designing, installing and maintaining medium wind turbines, with 900 references to date.

To ensure that those with wind projects receive the best possible O&M service, there are a number of factors that developers can take into account when determining their own O&M needs. These include:

Technology

Experienced and proven turbine technology is key to both performance and the O&M costs over the turbine lifespan. I would strongly recommend developers to consider the manufacturers' track records, references, engineering capabilities and O&M organisation, in assessing the reliability of the chosen turbine type.

O&M is essential to the upkeep of all wind projects

Site assessment

The developer and the manufacturer should thoroughly evaluate the site conditions to ensure that the installed turbine is suitable and best adapted. Reputable and experienced manufacturers have a range of design options and can determine the optimum turbine for the site.

Service aligned to the business plan

Developers aim to maximise production and control the costs in order to meet or exceed targets forecasted in their business plans. Over the lifetime of the turbine, O&M is essential in making this happen. Therefore, the structure of the service package, including provision of parts, labour and guarantees should ensure that the manufacturer and operator are working as a team to successfully reach specified targets.

Given the level of investment Vergnet places in developing high quality and bespoke wind turbines that will deliver maximum yield; we are committed to ongoing maintenance and servicing to protect the investment made by our developers. It is our belief that the prevention is better than a cure, and as such O&M is essential to the upkeep of all wind projects.

With a successful full O&M service already in place since 2011 with Northern Ireland developer Simple Power, we launched our dedicated O&M service for the GB market earlier this year.

Planning maintenance can ensure that significant costs are not incurred at a later stage in your turbine lifespan

Keeping the faith

Brian Smithers, strategic development director at Rexel UK, argues that reducing renewable subsidies now in the name of public finances would be a grave error

There is a lot of discussion right now about renewable subsidies and how they will look in a few years.

Renewable subsidies are seen as a big government outlay and easy to scale back sending mixed messages to the market. Because of their future importance, this view is short sighted. But a time must nevertheless come when we don't need to rely on them.

Subsidies are there to get a disadvantaged market to maturity. Renewable energy offers the same output as fossil fuels – measured in kilowatt hours of energy - for your home or business. But renewables are years behind in terms of supply chains, R&D and infrastructure. They will compete but they need support to get to that stage. Subsidies have brought us a long way towards that point, but we are not there yet.

So what role should subsidies play, and what can we reasonably expect from government?

The most obvious role of subsidies is to reduce our reliance on fossil fuels. This is not about renewables replacing fossil fuels – that will take decades. It is about reaching a stage where they can play a viable role in the energy mix and be supplied at a price energy companies, and consumers, will pay for.

We are not yet expecting wind to compete with natural gas on a cost per kilowatt hour basis. But with power plants close to capacity, adding renewables to the mix can mean we don't have to fire up additional power stations – an expensive way of dealing with a 10 percent energy surge in energy demand each evening. In this situation, wind or solar can be very cost effective very quickly.

The advantages also cover energy security. Russia provides about 30 percent of Europe's natural gas and in June it cut off supplies to Ukraine. As a net importer of both oil and gas, the UK is not immune to political instability in oil and gas producing nations which could dramatically increase prices and affect our ability to keep the lights on. Having viable, home grown energy resources is critical to avoiding this, and worth paying for.

Green lifeline: Brian Smithers, Rexel UK's strategic development director, stresses that renewable subsidies are needed for up to another 15 years, despite pressure on government to reduce spending

Much of the value of subsidies is getting people through that pain barrier of change without undue cost to themselves

Subsidies should exist until we reach the point where renewables play an integral part in the energy mix

Renewables also offer consumer benefits that fossil fuels do not. Rooftop solar panels or wind give consumers power to control their energy in the way grid supply with a monthly bill does not. A growing understanding of our energy consumption gives consumers more control – driving down costs.

Much of the resistance to renewables is about resistance to change. If we can encourage and incentivise people to use renewables, uptake will happen naturally. Much of the value of subsidies is getting people through that pain barrier of change without undue cost to themselves.

Subsidies should exist until we reach this point where renewables play an integral part in the energy mix, and one accepted by a critical mass of consumers and businesses. We are probably looking at between 5-15 years, depending on energy prices, cooperativeness of big producers, and consumer willingness to engage with renewable energy.

But with the right subsidies, we will reach this point. Until this time, we should be able to rely on government to continue with subsidies, at a reasonable level, to support the industry, consumers and the UK's economic future. We very much hope we can.

Playing it safe

Too little attention is being paid to cable protection in PV installations warns **Tim Creedon**, sales and marketing director at Flexicon, potentially leaving the installer liable for future maintenance and substantial fines

Most PV installations are expected to last at least 25 years, so a great deal of care is taken when selecting the major components for solar PV, such as the PV panels, inverters and circuit protection. Sadly cable protection is often an afterthought and this is big mistake.

Exposing yourself

Cable damage and degradation can affect the long-term viability of an installation and have serious safety issues. All of this could leave the specifier and installer liable for future maintenance plus fines for lost revenue due to the installation's downtime.

Solar PV installations are by their nature outside, which means that the cabling is potentially exposed to extremely harsh environmental conditions including UV, water and changes in temperature from below freezing to hot sunshine, plus a number of other hazards including rodents.

As an installer, you can protect individual cables on land or building based installations to some extent by securing them to the underside of panels or the mounting frames and ensuring that they are individually isolated in a DC combiner box. There are however, a number of areas where you need to group cables together, where you need an alternative to tie wrapping and also areas where it is not sheltered.

Risk of failure

For these areas a carefully specified conduit system will provide extra protection. A cheap option is a false economy because it will fail, leading to disruption and downtime.

Take UV protection. Over time ultraviolet light will degrade plastic materials such as the insulation on cables or on the conduit protecting them. This will result in lower impact strength, less flexibility and possible cracking and a lower fatigue life.

For peace of mind ask the manufacturer for independent test reports demonstrating the product's UV resistance.

Exposure to water is another hazard, so you need to consider the IP rating of any system and make sure that you use the appropriate fittings.

Hot topic

The installation will also face extremes of temperature from below freezing in the winter to high temperatures in the summer; which causes materials to age more quickly and also causes them to expand and contract, potentially leading to the build up of condensation.

Weakest link: Cable protection is an important but often neglected part of PV installations, potentially leading to catastrophic consequences

Many materials are also more brittle at colder temperatures, leaving them more vulnerable during impact.

Other hazards due to the climate may include wind, dust, lightning and for coastal installations the corrosive affects of salt-water spray on metallic components.

Location location

The siting of a PV installation will also introduce other potential hazards. A risk analysis for a solar farm on land will reveal that cables need protecting from site maintenance such as strimmers, from grazing animals and also from vermin attack. Cable theft in remote locations is another factor.

Selecting the most suitable conduit system for long term external installations requires a thorough risk assessment. Get it right and you will prolong the life of the cabling and even more importantly protect people from electric shock.

When so much is at stake, it pays to seek technical advice from a manufacturer that you can trust. Cheap imported conduit is not an answer, you need to select a system that will withstand a wide range of hazards to ensure prolonged cable life and look for guarantees of performance from a manufacturer who can support any claims.

Above and beyond

Rupert Higgin, managing director of TGE Group, considers what needs to be done to secure a successful and sustainable solar strategy going forward

It's not that the latest renewable figures haven't made for good reading. UK green energy soared last year with government figures showing an increase in electricity from renewable sources of 30 percent, with the installed electrical generating capacity of solar increasing by 59 percent over the same period.

In the same vein, ground-mounted solar PV capacity deployed in the UK has exceeded two gigawatts during the past two years, with recent installation rates scoring well above the levels the government was expecting, with scope for even more. Despite these positive elements, the government still lacks a consistent and cohesive policy for solar, which in turn is undermining the industry and its potential in the UK.

The government's decision to pull the plug on the its Renewable Obligation (RO) scheme for new solar farms with a capacity greater than five megawatts from 01 April 2015, two years earlier than planned, has served a major blow to the renewables industry, removing the very certainty and confidence the legislation was originally designed to provide.

There is no real platform for growth in the commercial roof top sector, which is supposed to be the targeted growth area

Moreover, despite the government's PV strategy, there is no real platform for growth in the commercial roof top sector, which is supposed to be the targeted growth area.

Looking at the figures within the >50kW to 5MW banding, once standalone is removed, the volume produced by rooftop between July 2013 to June 2014 is only 65MW for the whole year.

Whilst DECC's decision to extend permitted development rights to commercial systems over 50kWp is a welcomed step in the right direction, much more is needed to boost deployment in this area.

We need to find a solution to overcome the long term nature of PV against the trend for short term leases for commercial property. Allowing existing PV systems to be relocated could help partially to address this obstacle.

We also need a new tariff rate for the 250kWp to 1MW banding. Currently, at 250kWp the rate drops from 10.25p to 6.61p, representing more than a 35 percent decrease, and there is no correlating decrease in installation price until the system is much bigger.

It would also help if there was a public endorsement of the 'rent a roof' model by DECC to public sector/government backed estates including local authorities, schools and hospitals. These estates mostly avoid the landlord/tenant issues of commercial property and have long term certainty over many properties in their portfolios.

Pressure also needs to be applied on DNOs to find a solution for grid upgrades as the lack of grid capacity, or rather the specific estimated cost of upgrading the grid for a solar project, results in many projects are never installed.

The news that the Feed-in Tariff will remain unaltered for the rest of the year provides little comfort at this time. Greater industry consultation and collaboration is needed to boost the market and to tackle the obstacles that stand in the way. Until this is addressed, the huge potential of solar and its particular potential with commercial roof tops, is likely to remain untapped.

Give and take: Despite the welcome publication of the Solar Strategy, many of its aims have been compromised by government-placed obstacles, says TGE managing director, Rupert Higgin

We need to find a solution to overcome the long term nature of PV against the trend for short term leases for commercial property

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Every little helps

Colin Calder, ceo and founder of PassivSystems, advises PV installers to broaden their customer smart control offering to prosper in a crowded marketplace

The market for solar PV installers has become incredibly competitive in recent years.

However the story isn't necessarily negative; the solar PV industry is still growing, and there is still reason for optimism for those working in this industry. In order to survive and profit, however, installers need to adapt to the market conditions and adopt new ways of differentiating themselves and standing out from their competitors. To do this, they must ensure that the solar PV packages that they are offering are superior to those of their peers, and will achieve the greatest amount of ROI and cost savings for their customers.

In recent years, smart technology has stepped into the spotlight for the management and integration of renewable energy sources such as solar PV. It is because of the recognition of the role that smart technology has to play in energy management that PassivSystems now produces smart technology for this industry.

In our effort to help renewable energy installers keep up with the various technological developments within this industry we have partnered and are partnering with solar PV installers so as to help improve their product offering. These partnerships work by our installers bundling our smart home energy control product PassivLiving HEAT and / or our renewable energy management system PassivPro in with their own solar PV installation packages so as to offer their customers that 'little bit extra'. By doing this our partners have not only benefitted their customers but also themselves.

Firstly, by offering their customers a smart home energy control product such as PassivLiving HEAT – the installers in question are differentiating themselves from their peers. With the bundled product, the customers are not only buying a solar PV system, but also systems that will help them control their heating and hot water in an efficient way.

Secondly, by bundling in the smart energy PassivLiving HEAT system into their PV installation packages, our installers are enabling their customers to save ~23 percent on their energy bills, thus helping them to create a greater return on their investment. This ROI boosting extra has been proven in the past to help our installation partners convince some of their more sceptical potential customers of the financial merits of home energy generation with solar PV.

In this vein, the bundling in of PassivSystems's PassivPro product for renewable energy management also gives installers the opportunity of offering their customers a more complete package by enabling them to monitor the performance of the solar PV panels post installation. Solar PV panels have long been known to be inefficient due to factors such as panel dirt, electricity spikes in the grid, and incorrect panel angling. PassivPro helps the PV installer to work around these problems by remotely monitoring the solar PV assets in question, feeding back the panel's efficiency data to the installer and giving the installer remote control over the panel in question.

Finally, our partners can improve their own profit margins and thus benefit financially from the bundling and retailing of the PassivLiving HEAT and PassivPro systems as part of their own solar PV offerings due to the fact that our partners can acquire the systems from PassivSystems at lower trade prices and sell them on to their end customers at the higher retail prices.

With the debate surrounding both the domestic and professional solar markets on-going, this industry is expected to continue changing for years to come. It is therefore imperative for installers operating within this market to change and adapt their business methods so as to remain profitable within this industry.

Branching out: Offering smart PV controls will differentiate installers from their peers and offer a valuable extra revenue stream, says Colin Calder, founder of PassivSystems

Smart technology has stepped into the spotlight for the management and integration of solar PV

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Navitron seeks solar thermal boost

Stephen Knight, commercial director at Navitron, has called on the government to provide increased financial support for solar thermal, amid falling sales.

The plea follows the publication of sales data from major manufacturers, compiled by the Heating and Hotwater Industry Council (HHIC). Total sales of solar thermal units have slumped to their lowest level for over 20 months, despite the introduction of the domestic RHI.

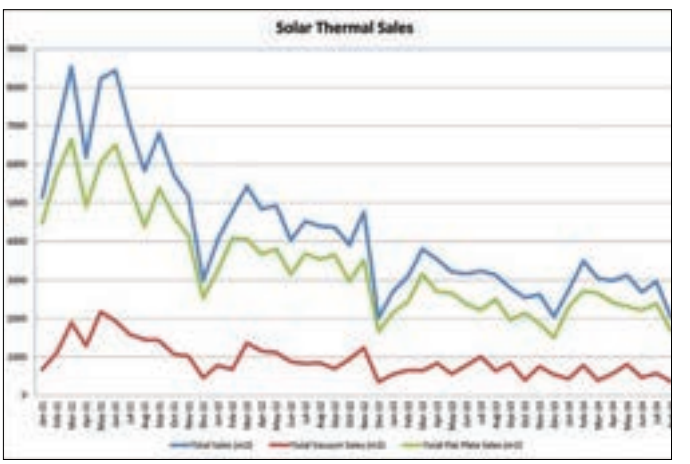
According to Stephen Knight, a collapse in demand has occurred due to successive delays in the introduction of the RHI, and the inadequate tariff homeowners are currently paid (19.2p/kWh).

"I think these figures demonstrate how catastrophic the announcement and subsequent delay in implementation of the RHI has been for the solar thermal industry," said Mr Knight.

"Training organisations have been encouraging people to train as solar engineers based on RHI registrations but, if you examine those closely, there has been no increase in new installations just a lot of heritage registrations."

He added: "In addition, the burden of MCS and RHI compliance is consigning solar thermal to the renewable technology of last resort, compounded by the fact that if your solar thermal system contributes to your heating you are not eligible for RHI payments at all."

"The industry really needs a shot in the arm, and quickly."



Source: Heating and Hotwater Industry Council (HHIC)

Kicking up a stink

No longer a niche or peripheral technology, **David Kinnersley**, a local partner at Fisher German, says great riches are on offer for installers equipped to deal with anaerobic digestion (AD)

Big deal: David Kinnersley, Fisher German, tips anaerobic digestion as the chief growth area in renewables for installers to exploit

There has been a huge growth in anaerobic digestion over the last five years as farmers have made the most of diversifying to increase their income.

This means those with the skills set to install these plants are increasingly in demand as the technology has gained greater importance in the renewable energy industry due to its many benefits.

Government incentives have proved beneficial in establishing the anaerobic industry with the Feed-in Tariff and the introduction of the Renewable Heat Incentive for CHP heat and biomethane.

It means it is seen as a great way of treating farming and food waste not only from an environmental perspective, but also for the economic benefits.

The project installation requires a range of skills including electricians, plumbers and construction specialists who have all benefited from installing the technology. Growth has been particularly strong in Herefordshire and Shropshire, which are real hot-spots, but also elsewhere in the UK. I am involved in projects all over the country ranging from Scotland to Cumbria and Kent to Lincolnshire.

While there is intense activity during the construction phase there will also be a need for ongoing maintenance which is great news for maintaining the supply of work.

There is certainly the potential of more jobs for installers because there is no sign of a slowing down in demand.

Inward investment is also increasing since worldwide companies within the industry are opening offices in the UK to meet demand. So I would definitely recommend training in this area to ensure people with the skills needed don't miss out on this growing opportunity.

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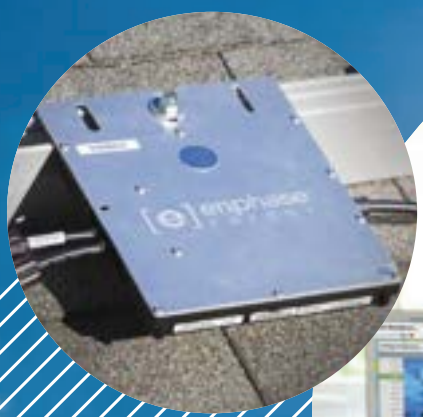

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In a spin for solar

Norcroft Energy has put the finishing touches to a PV installation at Ranah Stones Farm, a camping and caravanning club near the route of this year's Tour de France

A 75 panel 18.35kW system was installed to power the electric hook ups on hard standing areas for five caravans.

Ed Cockburn, partner in the farm, said: "We're always looking for a way to reduce overheads and become more sustainable. Solar panels give us the opportunity to do this whilst reducing our carbon footprint at the same time.

"Our next step will be to look at biomass boilers and we will have no hesitation in approaching Norcroft again."

Philip Mosley, managing director at Norcroft Farm, added: "Ranah Stones Farm can now benefit in three ways from solar PV technology. First, they have the reliability of generating their very own power. Secondly they can make a profit with guaranteed FiT payments, and thirdly they can profit on the export tariff.

"We are very excited that this year the route through Yorkshire took athletes through Huddersfield and Holmforth. Ranah Stones Farm was a great location for people to stay, with fantastic views.

"The Tour de France passed by over 1,000 solar panels installed by Norcroft Energy and it's only fitting that Ranah Stones Farm now has them too."

On the map: This year's Tour de France route through Yorkshire took riders passed Norcroft Energy's 18.35kW install at Ranah Stones Farm

A not so poultry return

Renewable specialists **TGE Group** has recently completed a three-phase commercial solar PV installation for Patrick Dean Ltd, a Lincolnshire farming company that produces 14,000 pigs a year for Morrisons supermarket

On the back of a comprehensive site survey, TGE Group designed, built and installed a bespoke system involving two roof mounted solar PV systems as well as a ground mounted system. With a seven year payback, the combined 200kWp installations will generate 170,000kWh of energy whilst providing a 13 percent return on investment and save 90 tonnes of carbon per year.

Alastair Priestley, managing director of Patrick Dean Ltd, said: "The pressure of constantly rising energy prices motivated us to look at alternative options that would help reduce the business' costs and, with it, risk.

Fields of gold: Alistair Priestley, managing director of Patrick Dean Ltd, looks forward to earning a 13 percent ROI from the Lincolnshire pig farm's 200kWp solar array

"The solar project offered a sound financial investment which will significantly bring down our energy bills whilst reducing our exposure to market fluctuations."

With a fairly constant electricity demand throughout the year between heating and cooling, the farm expects to use 100 percent of electricity generated on site. The system can be adjusted for heating or cooling and brings in revenue via the RHI and Feed-in Tariff schemes. To ensure optimum performance is maintained and any drop in output is immediately highlighted, TGE Group also installed a monitoring system.

Stephen Davies, director at TGE Group, added: "It's important to select the right renewables for the job and to ensure that the systems are effectively monitored to maintain performance. There was a great opportunity here for Patrick Dean to reduce their costs and we are delighted to have helped deliver a double digit return on their investment whilst also protecting them for energy price rises."

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Oakham Rugby Club scores big with PV

Following the opening of a brand new clubhouse, **Oakham Rugby Club** opted to make it as sustainable as possible with a 76-panel system

Located in the rural county of Rutland, the newly constructed clubhouse incorporates eight improved changing rooms, more showers and a larger bar area and kitchen, which in turn, resulted in higher utility bills and costs. However, the building's green technology will make a significant contribution towards utility bills while earning the clubhouse over £43,000 over the next 20 years.

"We'd been looking to install solar panels for quite some time, but the roof on our old clubhouse was too small and structurally unstable," said Richard Gant, treasurer for Oakham Rugby Club.

"After reading about the benefits that come with the Feed-in Tariff, we realised solar panels were something we needed to include on the new building to not only save money and generate income for the club, but to also set a positive example of sustainability within our community.

"Since installing, not only have we seen huge savings in our energy bills, but the panels are also situated so they are one of the first things people see when approaching the club. We hope this makes a statement to our local community that we support sustainability and that more people should embrace renewable energy to lower their carbon footprints."

Stephen Knight, commercial director at Navitron, added: "We have very strong connections with Oakham Rugby Club, so it was an honour to design and fit an energy saving and cost efficient system to a place so many of us spend our weekends!"

Winning result: Oakham Rugby Club's 76 panel system with earn £43,000 over the next 20 years

£74m project set to transform Speyside

John Laing and the **UK Green Investment Bank** (GIB) have announced plans to invest in a new £74m green energy facility in Speyside, Scotland developed by **Estover Energy**

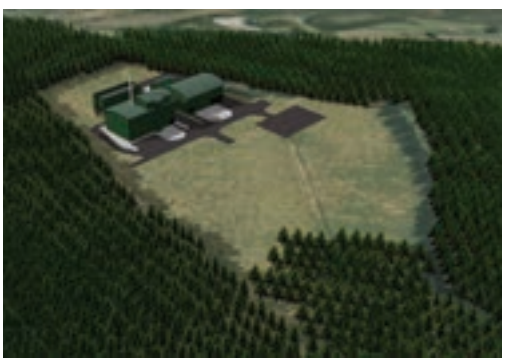
The new biomass CHP plant near Craigellachie, Moray, will generate 87.4 GWh per annum of renewable electricity – enough to power more than 20,000 homes. It will also generate 76.8 GWh per annum of renewable heat. Together, the carbon saving equates to 42,000 tCO2e per annum, the equivalent to taking over 18,000 cars off the road.

The project promises to create 123 jobs (100 in peak construction and 23 permanent) and support one of Scotland's most important export industries.

The new CHP facility will contribute to reducing the cost of energy at The Macallan distillery by providing 90 percent of all of the steam needed in the distillation process. By using biomass to generate heat instead of natural gas, the distillery will reduce its greenhouse gas emissions by over 17,500 tCO2e, equivalent to taking almost 8,000 cars off the road.

Business secretary, Vince Cable said: "With £3.8 billion of funding the UK Green Investment Bank has been set up to help businesses make the transition to a green economy right across the country.

"This investment in Speyside will not only help secure jobs, boost a vital industry and support the local supply chain but also generate renewable energy for homes in Scotland. Through our industrial strategy we are working in partnership with business to give companies the confidence to invest, securing green jobs and a stronger UK economy."



Cash injection: The UK Green Investment Bank (GIB) will contribute towards the £74m cost of the Speyside biomass CHP plant

About the project

Total project cost: c. £74m

Electricity: 87.4 GWh / year sold into the National Grid

Heat: 76.8 GWh / year sold to the Macallan distillery

Other environmental benefits: 42.0 ktpa CO2e saved each year, equivalent to taking 18,000 cars off the road

Developer: Estover Energy

Capacity: Up to 12.5 MW electric and up to 10 MW heat.

Feedstock: A consortium of local growers and forest industry suppliers including Stobart Biomass Products and UPM Tilhill will supply the plant

Expected commission date: 2016

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Kobashi moves closer to self-sustainability

Kobashi Essential Oil's new ground-mounted PV system has put the business one step closer to achieving 100 percent self-sustainability

Kobashi Essential Oils, which supplies to the general public, therapists, clinics and hospitals worldwide, has recently added a 61kW ground mounted PV system to its growing array of energy saving measures and renewable technology as owners Scott and Lynda Ballard work towards complete self-sustainability at their farm and warehouse, based in Dunsford on the outskirts of Dartmoor National Park.

SunGift designed and installed the bespoke ground mounted system to complement their 10kW and 4kW arrays supplied by SunGift in 2011.

Kobashi Essential Oils has already installed solar thermal, thick insulation, LED lighting and energy efficient heating. The Ballard's efforts are now generating so much energy renewably that in addition to using the energy they generate on site, the PV has exported 81,301 kWh back to the grid (that's the equivalent electricity used by 24.63 homes in a year).

"Since around 2000, I have been interested in renewable energy options," said Scott Ballard.

"Growing up in America in the 1970s witnessing the fights at the pumps when the fuel ran out and living in air polluted cities LA and NYC taught me that relying on fossil fuels was not an option. Lynda and I believe wherever and whenever we can, we should create our own sustainable cleaner energy."

Interesting angle: Kobashi Essential Oils has widened the focus of its energy-orientated business to embrace renewable technologies

Highland community scheme gets green light

New home owners in Aviemore can look forward to greener energy and lower bills thanks to an innovative community biomass scheme approved by **Highland Council's** planning committee

The 24 two and three bedroom family houses being built at Milton Burn, in the heart of the Highland town, will be heated by a single biomass heating network powered by two 70 kilowatt biomass systems.

Community service: The 24 homes currently under construction at Milton Burn, Aviemore, will be heated by a single district heating system, fed by two 70kW biomass boilers

The wood pellet boilers – which will be installed and operated by ZHaus Sustainable Living – will provide all the heating and hot water for the quality detached and semi-detached homes which are being built by local builder Allan Munro Construction.

"These are high quality family homes, and our aim is to make them as comfortable and energy efficient as possible," said ZHaus director Thomas Solle.

"Community heating is ideal. The biomass boilers will provide metered heating and hot water to each home at a lower cost than oil or LPG, and homeowners will not have the worry or expense of buying and maintaining a boiler in their own home. The only difference people will notice is lower bills.

"Biomass boilers are increasingly popular in the north of Scotland," added Solle. "They are a very eco-friendly way to generate heat, and we can source 100 per cent of the wood pellets locally, with good long-term sustainable supply.

"So far the main interest has been from commercial users such as schools and hotels, but they are ideal for community heating in developments such as Milton Burn."

Natural wastage

Wiltshire Council has installed the largest single-roof Local Authority-owned PV system in the UK

Work to install the system on the roof of the new Northacre Resource Recovery Centre (RRC) in Westbury in the South West of England has been completed.

The 1,248 solar panels from manufacturer Vikram Solar – covering an area equivalent to more than seven tennis courts – will generate over 280,500 units (kWh) of electricity each year. This electricity, all of which will be consumed on site at Northacre RRC, will help to power the mechanical biological treatment process used to turn household waste into solid recovered fuel (SRF) in place of it being sent to landfill.

The benefits of the solar panel system to Wiltshire Council are significant, with annual bill savings and income from the Feed-in Tariff of over £55,000, as well as annual CO2 emission reductions of 148 tonnes. Over 20 years the benefits are expected to exceed £1.5 million, and avoid CO2 emissions of over 2,720 tonnes.

David Snape, commercial manager at Solarsense, the company responsible for the design and installation of the system said: "The Northacre RRC project is a great example of how solar PV can significantly reduce consumption and deliver long-term cost savings for industrial processes. Wiltshire Council is making a very clear long-term commitment to carbon reduction and sustainability, as well as a very sound investment which will benefit the county."

Mike Webster, group director for Hills Waste Solutions, the company that owns and operates the Northacre RRC under a 25 year contract with Wiltshire Council, said: "Investing in energy security is an important step and we are pleased to have been involved in the procurement process with the Council."

Double whammy: Northacre Resource Recovery Centre's new 1,248 panel system will contribute towards the energy needed to process household waste, cutting both Wiltshire Council's carbon emissions and use of landfill

UK's largest AD plant swings into action

Building and civil engineering contractor **Britcon** has completed construction and officially handed over a new £20 million anaerobic digestion (AD) plant in Widnes for food waste recycler ReFood

The plant is the largest gas-to-grid AD plant in the UK and the second plant for the ReFood brand in the UK. It will recycle some 90,000 tonnes of commercial and domestic food waste and will generate up to 17NWhs of biogas which will be transported directly to the national gas grid to provide enough power for 8,000 homes

The Widnes plant is the first gas-to-grid AD plant in ReFood's European portfolio of 11 plants, which together will provide enough power for 46,000 homes

Mass consumption: Food waste recycler ReFood will eventually produce enough biogas across its European operations to power 46,000 homes, beginning with its plant at Widnes

ReFood Widnes offers integrated food waste collection and recycling services for businesses in a 50 mile radius including hotels, restaurants, cafes, bars, local authorities and retailers.

Paul Morris, operations director at ReFood, said: "We are delighted that the Britcon team has completed this project on time and on budget with an impeccable safety record. Our first gas-to-grid AD plant is now operational as a showcase for both the ReFood brand and also the AD industry as a whole both in the UK and Europe."

John Whitmore, construction director for the project at Britcon, said: "Through our work with ReFood we have developed an intense process of value engineering which ensures best value throughout all elements and stages of the project. It requires a complex arrangement of a highly experienced team throughout procurement, delivery, flexibility and post management to deliver the project together with an exemplary health and safety record.

"We have built a strong and trusting relationship with ReFood across the UK and are delighted to be considered a valued partner as it seeks to expand existing operations."

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Knowledge: Case studies

BIOMASS

What: 16th century coaching inn overhauls heating and hot water system

How: HDG Compact 80kW wood chip boiler supplied by Euroheat

Result: Annual carbon saving of 35 tonnes compared to oil

Glan yr Afon Inn, located in Holywell, Flintshire, can now boast 14 renewably-heated luxury bedrooms following the installation of a wood chip boiler.

Menai Heating partnered with Euroheat in the delivery of the project, which was part of a wider expansion of the premises.

Lee Maher, Menai Heating's owner, said: "The project brief involved working with some elements of the existing structure and updating the building's radiators. There is a specially designed plant room, which houses the boiler and pellet storage tank, but also doubles as a laundry room, enabling the washing to be hung out and dried overnight further saving on running costs of expensive tumble driers and unnecessary electricity usage.

Smart money: Glan yr Afon Inn can now add £9,000 to its annual income from its 80kW wood chip boiler under the RHI

"The system will use approximately 28 tonnes of wood chip to generate around 130,000kWh, with the owners expecting around £9,000 per annum from the installation under the government's Renewable Heat Incentive."

Owner of Glan yr Afonin, Karen Wright, added: "It was an easy choice for us to switch to a biomass heating system, as we have a similar system installed in our home, so we are well aware of the cost savings and green credentials. Escalating oil prices and various government green schemes mean that long-term, we will repay the cost of the system and create a more successful and sustainable business.

"A massive positive, as well as the improved comfort for our guests, is their reaction to the biomass system, with some requesting to see it in action! A great deal of our business is from Gwynt y Mor, which is close by; an area which is championing green technologies with the construction of an offshore wind farm."

HYDROELECTRICITY

What: Hydroelectricity returns to Cragside House, Northumberland

How: 10kW Archimedean Screw

Result: All lighting at Cragside House renewably powered

Mann Power Consulting Limited, of Kirkham, near Malton, has installed an Archimedean Screw turbine at Cragside House near Rothbury in Northumberland, the first place in the world to be lit by hydroelectricity. The Screw scheme will provide all the energy necessary to light the house.

The new scheme has been officially opened by popular North East actor Robson Green, and will feature on his travelogue Tales from Northumberland with Robson Green, produced by Shiver TV, and to be broadcast on ITV1 in early 2015.

Cragside was seen as a wonder of the late Victorian age when then owner Lord Armstrong developed a system of turning the power of water into electricity. He first used it to power arc lamps for the house in 1878, then in 1880, installed his friend Joseph Swan's newly invented incandescent light bulbs. A bright, clean form of lighting was introduced into domestic use, making Cragside the first house in the world to be lit by hydroelectricity.

At the time, Swan said: "Water power is the cheapest and best power when there is a stream of sufficient volume and fall to work a turbine."

Lord Armstrong himself said: "A neighbouring brook lights the house, and there is no consumption of any material in the process."

Green power: Dave Mann, managing director of Mann Power Consulting Limited, with actor Robson Green and Andrew Sawyer, Cragside property curator, at the Archimedean Screw

The Mann Power scheme uses a 17m long Archimedean Screw that can produce up to 10kW – enough to once again power all the lighting at Cragside House. Taking its water from Tumbleton Lake, in the house's grounds, the rotational energy of the Screw drives an electric generator, and the power generated is sent through cables directly to the house.

Dave Mann, managing director of Mann Power, said: "We're thrilled and privileged to be working at Cragside House, which is where it all began back in the late 1800s when the renewable energy pioneer Lord Armstrong used its lakes to generate hydroelectricity to light the house."

BIOMASS

What: Grade II listed church building utilises sustainable heating

How: NIBE Pellux 100 unit

Result: Low-cost low-carbon space and hot water heating

Builder and contractor Martin Hurlow bought the 160-year-old off grid property in Tenby, Pembrokeshire with a view to converting it into a home for his daughter and her partner.

Having decided against the costly option of installing a gas line, Martin turned to local installer Good Life after reading about NIBE's biomass range online. The NIBE VIP Installer specified a Pellux 100 unit to heat the reconstructed interior of the building.

Martin said: "When I bought the church it was being used as a commercial aquarium and reptile house. There was no central heating and the only source of warmth came from the generators used to heat the animals' tanks. Before that, the building had been empty for 20 years. Initially, I looked into running a gas line to the property – but when I found out this would cost in excess of £6,000 (and that was if I did most of the digging myself!), I started exploring other options.

"Having researched NIBE's renewable heating portfolio, I went to Good Life for their recommendation – and after completing a full site survey, they agreed that the Pellux 100 would be an excellent fit for the property's needs. It is now tucked neatly away in a purpose-built lean-to that I constructed myself at the side of the building, and works seamlessly with both the traditional radiators in the bedrooms and the new underfloor heating system in the communal areas."

Grand designs: Tenby builder Martin Hurlow was impressed with the financial credentials of biomass, after being quoted £6,000 for the installation of a gas line to a off grid church renovation

Robin Bowen, managing director at Good Life, added: "This was a unique project, especially given the property's listed building status. As well as providing an efficient and sustainable heating solution, the system is eligible for annual RHI payments – making it a smart, long-term choice from an economical point of view too."

ASHP

What: 700 year old Derbyshire church installs 21st century heating

How: 2 x Danfoss DHP-AQ ASHPs and solar PV

Result: Year round heating for congregation

Shirley Parish Church, near Ashbourne in Derbyshire, has achieved its goal of creating a sustainable energy system, thanks to the installation of two air source heat pumps from Danfoss.

Members of the Parochial Parish Council set about transforming the Church, parts of which date back to the 14th Century, into a comfortable, warm space, and approached Sheffield-based Coefficient Renewable Heating Solutions.

Coefficient Renewable Heating Solutions recommended two 18kw DHP-AQ air source heat pumps which would provide all the space heating for the large building, replacing inefficient, and often ineffective, electric radiant tube heaters.

Heaven sent: Shirley Parish Church, Derbyshire, is now a more comfortable space for worshipers after replacing ineffective electric tube heaters with the power of air source heat pumps

Andrew Hubble, systems engineer at Coefficient Renewable Heating Solutions, said: "The Church can now be kept warm throughout the year, and the church council can be assured that they are doing their bit for the environment by reducing the building's carbon footprint."

The Church has been undergoing renovation for the past five years, and has been given £250,000 funding from various sources, including grants from The Big Lottery Fund and Derbyshire Dales District Council, and donations from the general public.

The traditional stone-built Church now has under floor heating in one area, high output radiators under the pews and solar PV panels on parts of the roof.

John Fletcher, treasurer to the PPC, the Church Council which runs the building, said: "Before we had a heat pump installed we were only able to heat the Church once a week, on a Sunday, for the six months of winter. Now we heat the building from 6am – 10pm everyday of the year, and it makes for a much more comfortable space – we have even noticed a rise in numbers of people attending our congregations!"

Figure it out

Generation tariffs for non PV technologies

Technology	Band (kW)	Tariffs (p/kWh)
Hydro	≤15	19.01
	>15-≤100	17.75
	>100-≤500	14.03
	>500-≤2000	10.96
	>2000-≤5000	2.99
Wind	≤1.5	16.00
	>1.5-≤15	16.00
	>15-≤100	16.00
	>100-≤500	13.34
	>500-≤1500	7.24
	>1500-≤5000	3.07

(Source: OFGEM)

Number of MCS registered installers per technology

Technology type	Cumulative number	Registered Aug 14
Solar PV	2660	37
Biomass	339	05
Air source heat pump	877	15
Ground source heat pump	714	09
Solar thermal	978	14
Small Wind	99	0
Total	3156	91

Number of MCS registered installations per technology

Technology type	Cumulative number	Installed Aug 14
Solar PV	579529	9871
Biomass	6586	418
Air source heat pump	30624	331
Ground source heat pump	8816	80
Solar thermal	6873	74
Small Wind	4717	08
Total	637145	10782

(Figures supplied by Gemserv)

Generation tariffs for Solar PV

Tariff band	FiT rate (p/kWh)
<4kW	14.38
>4-10kW	13.03
>10-50kW	12.13
>50-150kW	10.34
>150-250kW	09.89
>250kW-500kW	6.38
Standalone	6.38
Export Tariff	4.77

Domestic RHI tariffs

Technology	Tariff rate (p/kWh)
ASHP	7.3
Biomass boilers	12.2
GSHP	18.8
Solar thermal	19.2

Tariffs apply to all eligible installations installed since 15 July 2009

Green Deal

Month	Assessments	Live GD Plans
August 14	26626	277
Total	326884	2092

Green Deal supply chain

Month	Assessor organisations	Providers	Installers
August 14	01	05	39
Total	393	161	2774

(Source: DECC)

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	0.55 per litre	2530 litres	£1,392
Wood pellets	4800 per tonne	94	24300	235 per tonne	5 tonnes	£1,175
Natural gas	1 per kWh	90	25300	0.042 per kWh	25300 kWh	£1,062
LPG	6.6 per litre	90	25300	0.39 per litre	3833 litres	£1,495
Electricity	1 per kWh	100	23000	0.16 per kWh	23000 kWh	£3,680
*Air source heat pump	1 per kWh	290	7931	0.16 per kWh	7931kWh	£1,269
*Ground source heat pump	1 per kWh	360	6389	0.16 per kWh	6389kWh	£1022
Dual mode system 1						
Oil boiler (30% of heat load)	10 per litre	90	7590	0.55 per litre	759 litres	£417
*Air source heat pump (70% of heat load)	1 per kWh	290	5552	0.16 per kWh	5552 kWh	£888
Dual mode system 2						
Gas boiler (30% of heat load)	1 per kWh	90	7590	0.042 per kWh	7590 kWh	£319
*Air source heat pump (70% of heat load)	1 per kWh	290	5552	0.16 per kWh	5552 kWh	£888

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.

RHI non-domestic rates

Tariff name	Eligible technology	Eligible sizes	Tariff rate (pence/kWh)	Tariff duration
Small biomass	Solid biomass: Municipal solid waste (inc CHP)	Less than 200 kWth	Tier 1: 7.6 Tier 2: 2.0	20
Medium biomass	Solid biomass: Municipal solid waste (inc CHP)	200 kWth and above, less than 100 kWth	Tier 1: 5.1 Tier 2: 2.2	20
Large biomass	Solid biomass: Municipal solid waste (inc CHP)	1000 kWth and above	2.0	20
Small ground source	Ground source heat pumps, water-source heat pumps, deep geothermal	Less than 100 kWth	Tier 1: 8.7 Tier 2: 2.6	20
Large ground source	Ground source heat pumps, water-source heat pumps, deep geothermal	100 kWth and above	Tier 1: 8.7 Tier 2: 2.6	20
Solar thermal	Solar thermal	Less than 200 kWth	10	20
A2W heat pumps	ASHPs	All	2.5	20

(Source: OFGEM)

Carbon emissions of different heating fuels

Fuel source	Carbon dioxide emitted ($KgCO_2$)	Carbon emitted (Kg)
Heating oil	5,060	1,380
Wood pellets	759	207
Natural gas	5,060	1,380
LPG	5,060	1,380
Electricity	11,500	3,136
ASHP	2,380	649
GSHP	1,210	330

Based on 23,000kWh needed to meet household's heating and hot water needs per annum. Conversion factors obtained from the Carbon Trust

What data would you like to see on this page?

email:

paul@andpublishing.co.uk

Who: Dave Hutcheon, renewable technology trainer, Dimplex

What: Dave has 28 years' experience in the plumbing and heating sector, including 15 years working with renewable technologies, and is a proud member of The Guild of Master Craftsmen. He has been teaching renewable technologies to installers for seven years and works closely with members of Dimplex's Accredited Installer Scheme

Out and about: Dave Hutcheon and Dimplex's mobile information centre have clocked up thousands of miles this year supporting installers boost the uptake of renewable technologies

Educating the masses

Monday

It's a nice start to the week as I have a meeting with my good friend Tony Holt who is starting up a consultation and installation business in Hampshire. He has arranged to meet with me to learn about Dimplex's new A-Class air source heat pump and our dedicated product showroom gives me a chance to showcase the product and its benefits.

Afterwards I head back to the desk to spend some time scheduling future training courses to be held at our training partner centres around the UK.

Tuesday

I have a full class of installers and designers in today attending our ground source heat pump training course which covers MIS3005, design, hydraulic integration, wiring, control strategy, commissioning and servicing. All of this is delivered at Dimplex's training facility where we have operational heat pumps and heating circuits to demonstrate the technologies we support. Thanks to my own installer background, I am able to teach not only the technologies but the skills needed by installers - not just sales-led training which is so often the case.

Wednesday

We recently invested in a mobile Renewable Heating Information Centre which has been touring the country and appearing at various rural and county shows, and today I am making the final checks before setting off for the next event. Tomorrow we are exhibiting at the Holsworthy & Stratton Agricultural Show in Bude, Cornwall, together with one of our installer partners, RES Devon. Despite the launch of RHI earlier this year too many homeowners are still unaware of the savings they could make with renewable heating and we are taking the Dimplex A-Class air source heat pump on the road to show them just what they are missing out on.

Thursday

It's the day of the show in Cornwall which means an early start to get to the show ground in time. Like any leading manufacturer we are promoting the benefits of renewable heat and RHI as much as our own products, looking to convince off-gas homeowners to make the switch from oil or LPG.

I designed and kitted out the mobile information centre and it has been a huge success so far because it's given us a chance to meet rural homeowners, in partnership with local installers, and educate them about air source heat pumps, solar thermal and other technologies. I believe the partnership between installer and manufacturer is crucial to create opportunities for installations and joint activities like this are just one way in which we support our Dimplex accredited installers.

Friday

A much needed half day back in the office at Dimplex HQ in Southampton, which gives me a chance to catch up on some paperwork and administration. The Dimplex Renewable Heat Information Centre will be making another appearance this weekend at a show in Staffordshire, so I'll travel up this afternoon and stay overnight. It's my birthday on Sunday but there's no chance to celebrate just yet as I'm heading to Bristol for the next leg of the roadshow. It's a fascinating job and I'm really enjoying the chance to meet end users at a variety of different shows of all sizes – but it means the birthday champagne is on ice for now!

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