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THE BUSINESS OF MICROGENERATION

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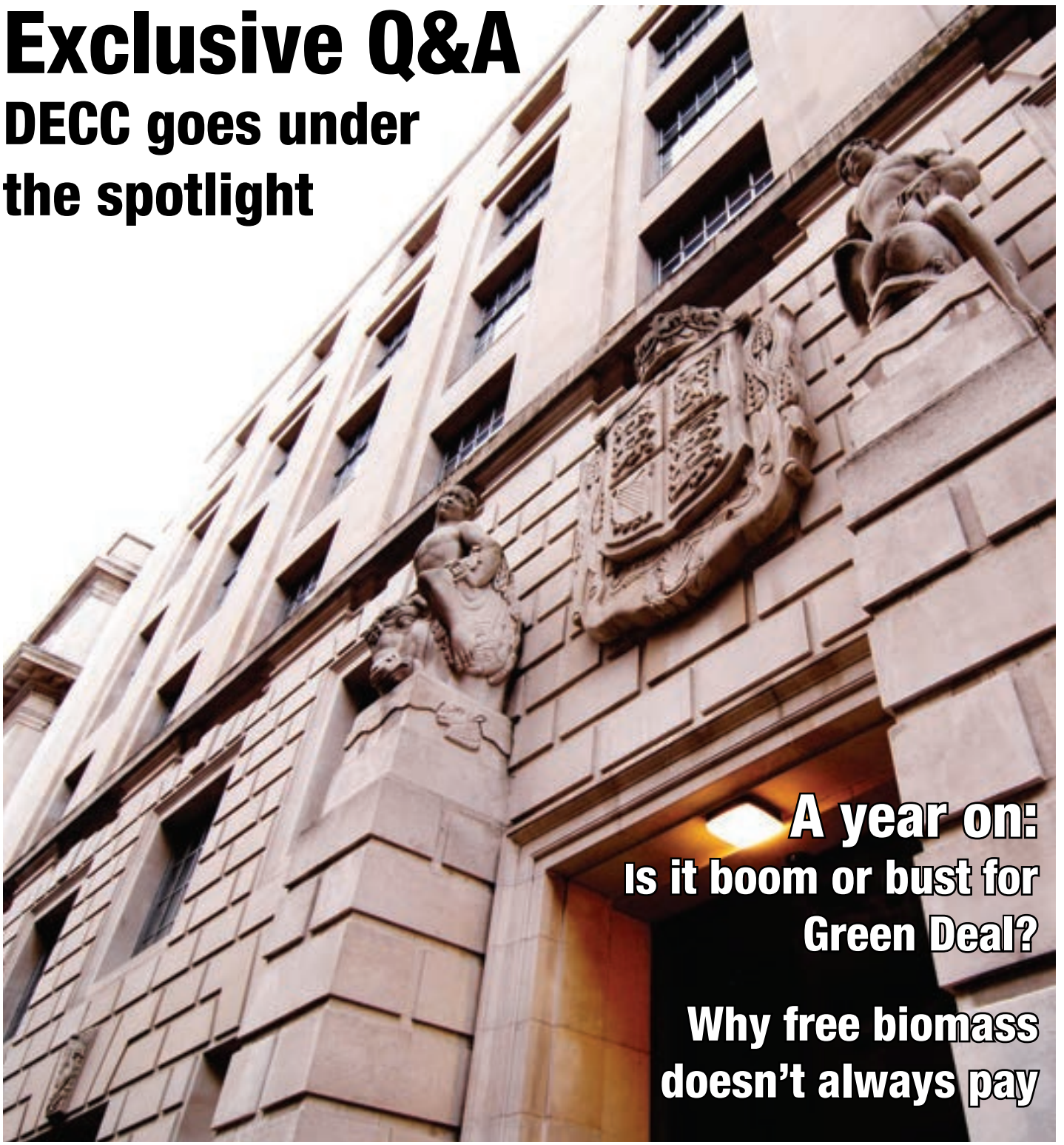

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Stand and deliver

If 2013 ended under a bit of a cloud, the next year looks on track to be more favourable as further opportunities emerge to deliver exceptional growth, not least via the domestic RHI.

I must concede, however, that for those of us a bit longer in the tooth, this message is in real danger of becoming repetitive as we all grow weary of being told the worst is behind us. But for readers trying to plot a course for their business in 2014, there are sound reasons to be optimistic.

For one, we can draw comfort that David Cameron's £50 giveaway on energy bills, as announced late last year at the expense of ECO, has done very little to dampen public anger at the steady procession of above inflation increases from the 'Big Six'. Going green can be the only full proof mitigation against our customers suffering any more of this misery.

This also seems an apt time to re-examine Green Deal as the troubled scheme celebrates its first birthday. Despite serious misgivings still harboured by the sector concerning its attractiveness to consumers, the appetite is certainly there from homeowners looking to make their properties more energy efficient. Almost 130,000 assessments logged by the end of December can attest to that so reform has to be the way forward rather than a simple abandonment.

Finally, most of you will by now have half an eye on Ecobuild which kicks off on March 04 at London's ExCel. Although it is unlikely to match the same vast scale seen in previous years, it is still the largest sustainability event to grace these shores by far and should not be passed up easily.

As official media partners, don't forget to visit the REI team on stand N2340!

Editorial panel members

Andy Buchan, CEEC, Future Renewable Energy

Andy Boroughs, Organic Energy

Garry Broadbent, Lifestyle Heating

Cathy Debenham, YouGen

Ryan Gill, Evoco Energy

Liz McFarlane, Zenex Solar

Steve Andrews, Ecoskies

Phyllis Boardman, Green Deal Consortia

Robert Burke, HETAS

Gideon Richards, MCS

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Lack of meter training will cost consumers £7m, says Itron

Newly published research from Itron concludes that incorrectly fitted meters for renewable heat projects could lead to £7m of wasted funds by 2020.

The survey of 100 installers showed 55 percent had received no training in this area while 29 percent have had to address problems associated with incorrectly fitted meters, including dirt getting into systems.

The £7m figure cited in the report is 29 percent of the £24m which will be spent on installing mandatory meters on the 165,000 installations DECC expects to be installed under the commercial RHI within the next six years.

Bernard McWeeney, Itron's water and heat manager, says that the industry must take heed of the skills gap as demand for heat meters continues to rise over the next few years. With the reputation of the industry at stake, Itron has taken a lead in developing educational materials for installers including its new e-learning guide.

"We had some feedback from the market that this was happening but with the estimated number of installs that will need metering, we felt this was a useful exercise for a fledgling industry," said McWeeney. "The idea was that if any gaps were found, we could try and close them.

"We are taking steps to improve the situation such as our e-learning guide. We are also talking to people about the benefits of using ultrasonic meters which have fewer problems than mechanical ones."

He added: "We must shine a light on these issues. The problem DECC and OFGEM often has is that they are not always talking directly to end users. They make efforts but manufacturers will always be a bit closer. We talk to them and will make our feedback available so we can act upon it as an industry."

Itron's heat meter installation guide can be downloaded at **www.itronheat.co.uk**

New identity: Chief executive Dave Sowden annouced the MPC's name change at its Christmas reception on December 16 2013

All change at the MPC

The Micropower Council's (MPC) executive committee has announced its decision to become the Sustainable Energy Association (SEA) as it seeks to increase its remit.

In addition to renewable energy generation, the SEA will now focus on representing the energy efficiency and demand reduction industry sectors.

According to chief executive Dave Sowden, the name change reflects a shift in the association's activities towards the converging supply and demand-driven elements of the UK's efforts to decarbonise.

"This is a bright new chapter for campaigning for the team at the Sustainable Energy Association, following 10 years of successful activity under our previous name The Micropower Council," he said.

"In this age of pressed government budgets, we believe that now more than ever there is a role for a membership organisation to be developing the economic arguments for supporting cost-effective demand side solutions, when Government too often is focussed on large-scale supply side solutions-such as unconventional gas.

"The Sustainable Energy Association will seek to develop a consensus viewpoint that innovative thinking which links up built environment technologies and the wider energy system will provide policy solutions for Government departments, helping to secure a cost-effective, renewable, efficient and secure energy future for UK consumers."

He added: "Our policy team are already working hard on the issues that matter to members including; forthcoming changes to the Energy Company Obligation, improvements to the Green Deal, the implementation of the Renewable Heat Incentive, changes to the Building Regulations, Electricity Market Reform, future Smart Grids policy, and others.

"We are looking forward to welcoming the industry to our official launch event in the House of Commons on March 24 where we will outline the vision and policy program to the wider market."

Energy Bill becomes law

Nature's law: The Energy Bill is designed to mobilise £110bn of private investment in low carbon alternatives to retiring fossil fuel power stations

The Energy Bill has now passed into law having received Royal Assent.

Central to the Bill is the government's Electricity Market Reform (EMR) package which can now swing into action after passing this final legislative hurdle.

By guaranteeing clean energy producers a minimum price for the electricity they supply (known as Contract for Difference), the aim of EMR is to unlock the £110bn of private investment needed by 2020 to replace ageing fossil fuel generation capacity with greener alternatives.

The Department of Energy and Climate Change (DECC) estimates that the measures will create over 200,000 jobs in the renewables sector and reduce carbon emissions by 20 million tonnes – 25 percent of current annual household emissions.

Industry bodies the Renewable Energy Association and RenewableUK both greeted the news as a welcome boost to the clean energy sector.

REA chief executive, Dr Nina Skorupska, said: "The complexity of EMR has been well documented. Government, and especially DECC, is therefore to be congratulated on succeeding in bringing the Energy Act in on time. This is a major step forward for realising the huge jobs and growth potential in home-grown, climate-friendly renewable power."

Maria McCaffery, RenewableUK's chief executive, said: "This has been a long and sometimes arduous process for everyone involved but we recognise that the Energy Bill has now become legislation and the framework for development beyond 2017 is known.

"Developing our domestic energy sources protects us from fluctuating fossil fuel prices, and could create tens of thousands of highly-skilled jobs over the next decade."

Government offers fracking tax boost

Councils that allow drilling for shale gas will be able to keep 100 percent business rates, the prime minister has confirmed.

David Cameron made the announcement on January 13 that local authorities could collect all business rates from fracking sites – as opposed to the usual 50 percent.

Communities will also be given £100,000 and 1 percent of revenues per site if shale gas can be extracted.

Cameron predicts that fracking could create 74,000 jobs in the UK and reduce energy bills by supplying all the country's gas needs for the next two or three decades.

Although offering all business rates to local authorities puts the financial incentives for granting planning permission for fracking on a par with large renewable energy projects, the community benefits package is substantially less than some renewable developers offer.

For example, solar developer and green energy supplier Good Energy typically offers £1,000 for every MW produced – a deal worth up to £25,000 for communities every year for 30 years. RES offers local residents an annual discount of at least £100 on electricity bills if they live in close proximity to a solar or wind farm.

Community payments for shale gas could be expected to peak within the first 10 years of a well's operation before sharply tailing off.

Environmental groups and green energy installers have criticised the payments as tantamount to bribery for councils to allow destruction of the countryside and the possible risk of earthquakes.

There is also dismay that fracking should be given such encouragement by the government in the face of mounting public opposition.

Friends of the Earth said: "Fracking sweeteners highlight the depth of opposition to fracking and lengths the government will go to overcome it."

Great debate: Despite public opinion being against hydraulic fracturing, David Cameron hopes to make it a central part of energy policy in the UK

Rupert Higgin, md of TGE Group, added: "Cameron's announcement comes at a time when the government is cutting subsidy payments for renewable energy produced, so effectively robbing Peter to pay Paul?

"With the opportunity to develop some of the most outstanding clean energy resources in the world, it seems inconceivable that the 'greenest government ever' looks to be heading, once again, down the carbon paved road towards fossil fuels."

Events

Solar Energy UK Roadshow
03 February Sandown Park Racecourse, Surrey
04 February Taunton Racecourse, Somerset
05 February Huntingdon Racecourse, Cambridgeshire
06 February Salford City Stadium, Manchester
10 February Thirsk Racecourse, Yorkshire
11 February Musselburgh Racecourse, Edinburgh
http://ukroadshow.solarenergyevents.com

Ecobuild
04-06 March 2014 ExCel, London
www.ecobuild.co.uk

SolarTech UK
24-25 May 2014 QE2 Conference Centre, London
http://greenworldconferences.com/produkt_125_solartech_uk_2014.htm

National Homebuilding & Renovating Show
27-30 March 2014 NEC, Birmingham
http://www.homebuilding.co.uk/events/national-homebuilding

Onshore Wind Conference
23-25 April 2014 London
http://greenworldconferences.com/produkt_150_onshore_wind_conference.htm

All-Energy Exhibition
21-22 May 2014 Aberdeen
http://www.all-energy.co.uk/

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/

UN urges investors not to burn money with fossil fuel holdings

The United Nations' climate chief has called on investors to switch their holdings from fossil fuel-backed funds to green assets.

Speaking to investors in New York, Christina Figueres said that millions of people risked seeing their pensions and investments becoming worthless if the world stays on course to avoid dangerous climate change.

To limit global warming to less than two degrees, more than 75 percent of the globe's declared gas, oil and coal reserves would need to stay in the ground, undermining the value of shareholdings in the companies which own and extract them.

Instead, Ms Figueres recommended the increasing number of options for cleantech investors by pointing to the estimated $36tn required to fund low carbon energy by 2050.

"The continued and dangerous rise in greenhouse gases in the atmosphere is in large part the direct result of past investments in energy and mobility systems based on the use of fossil fuels," she said.

"New investments must now assist in reversing this unsustainable trend, and quickly if the world is to have a chance of staying under a 2c temperature rise."

Wipeout: Those who invest in oil, gas and coal-backed funds could see the value of their savings evapourate, warns UN climate chief Christina Figueres

Enphase passes 1GW milestone

Enphase Energy has celebrated passing the 1GW capacity mark of microinverter products it has shipped since the company launched in 2008.

According to Enphase ceo, Paul Nahi, the milestone was reached following a strong fourth quarter in 2013 during which 107MW was dispatched worldwide.

"We continued to see very strong business momentum during the fourth quarter, mainly driven by a healthy residential solar market in the US," he said.

"During the fourth quarter, shipments exceeded 100MW of microinverter systems for the first time, marking another record quarter."

Bahco competition winners

Five lucky readers have each won an 'Easy Change' 1000V insulated ratcheting screwdriver set in last month's REI competition, run in association with Bahco.

With a retail value of £115, the sets will be sent by Bahco to the individuals listed below using the contact details supplied within the next four weeks.

- Alex Lovie, Richard Irvin Sustainable Energy
- Peter Hamilton, Renewable Heat Strategies
- Mark Forkin, NuTech Renewables
- Gerry McGowan, Glasgow Kelvin College
- Robert Glenn, Rockingham Design Partnership

A taxing problem for farmers

Neil Budd, senior associate and energy lawyer at SGH Martineau, warns of the hidden dangers of inheritance tax for landowners allowing the construction of solar farms on agricultural holdings

With developer RWE Innogy recently shelving plans for the 240-turbine Atlantic Array project in the Bristol Channel, there is likely to be even greater interest in the role solar energy can play in the UK meeting its renewable energy targets.

This growing interest in solar energy presents an attractive income stream for farmers, with most solar plant developers wanting a 25 year lease on the land they use. Importantly, the development of a solar plant on low grade farmland, such as fields used solely for grazing, does not necessarily mean the land is lost to farming.

In fact most solar developers will consider allowing the fields to be used for grazing provided that they have the ability to stop the grazing should the solar plant suffer damage. In our experience, whilst grazing obviously keeps grass growth under control, it generally rules out goats, as their penchant for eating just about anything, including the sheathing on electricity cables is well documented.

Solar plant developers have been encouraged by recent planning guidance for renewable and low carbon energy, with many foreign companies looking to expand their operations in the UK. The Department for Communities and Local Government has made it clear, that when assessing a planning application for a solar plant on farmland, local authorities should consider whether the application allows for continued agricultural use and/or encourages biodiversity improvements around solar arrays.

So far it all sounds good for landowners, but one issue that has not attracted much attention is the potential inheritance tax implications for farmers who are intending to allow a solar plant to be built on their land.

Inheritance tax is payable on an estate when someone dies provided that the estate exceeds a certain threshold (£325,000 in 2013-14). A farm will be included in a person's estate for inheritance tax purposes; however, agricultural property relief will apply to agricultural property which forms part of a working farm.

Grey area: It remains legally unclear if agricultural land hosting solar farms will retain its inheritance tax relief for farmers, says energy lawyer Neil Budd

This raises an interesting question; does leasing land for a solar plant mean that the relevant fields are no longer eligible for agricultural property relief?

Does leasing land for a solar plant mean that the relevant fields are no longer eligible for agricultural property relief?

Unfortunately, like many facets of English law, the answer is not entirely clear. The grant of a lease will not in itself cause the relief to be lost, but it is necessary for the land to continue to be used for agriculture. It is arguable that, if the lease is granted to the solar plant developer and the land is licensed back to the farmer for grazing, this would be sufficient for relief to continue to apply. However, this cannot be said with certainty.

One possibility we have explored is for a company to be established and for the whole farm to be transferred to this company. In this case, the farmer's interest in the land would be converted to an interest in shares which, for inheritance tax purposes, should be entitled to business relief. It would not be advisable however, for the transfer to take place solely in relation to the fields on which the solar farm was to be developed, as business relief does not apply if the main business of the company is to hold land.

This issue highlights the importance of considering the availability of agricultural property relief in the round and the overall farming enterprises undertaken. Landowners should seek expert advice on the matter to ensure the benefits of the relationship are truly symbiotic and not just assume the developer is offering a 'fit and forget' income stream for 25 years.

Through the looking glass

Cathy Debenham, YouGen founder and director, offers a glimpse of changing customer behaviour in the renewables marketplace as detected by the consumer information website

While solar PV is still the most installed technology at a domestic level by a long way, it is no longer as dominant as it has been. This is showing in what people are searching for online, and in the pages our visitors go to on YouGen.

Back in 2011 the vast majority of traffic was going to the solar PV page (just under 40,000 visits between January and September 2011). Other technology pages were getting around 7,000 – 8,500 visits in the same time period.

Fast forward two years and the picture has changed completely. After the home page and the blog page, the heat pump page is the most visited, followed by biomass boilers, with solar PV down in third place with just 11,190 visits in the first nine months of last year.

So what's changed?

When Feed-in Tariffs were high, solar PV was a no brainer as a financial product. Now it still makes sense, but is being bought for a much wider range of reasons than just financial return.

Heating is the biggest chunk of most people's energy bills and the recent announcements of price rises from the Big Six are going to focus their minds even more. With most of the detail of the domestic RHI now clear people who had put decisions on hold can move forwards.

The Green Deal is launched and up and running. Whatever you think about the delivery of the scheme, the basic idea behind it is sound. Having an independent energy audit of your property to establish the options for making it more energy efficient makes sense.

And for those of you who say that the Green Deal is never going to take off, have a look at these figures:

- Domestic solar PV installations (0-4kW, Jan-Aug 2013, maturing market) = 60,328
- Green Deal assessments done (Jan – Aug 2013, totally new market) = 71,000

Yes, they didn't turn into Green Deal plans, but DECC customer surveys indicate that people did go on to install measures, finding other ways to pay for them.

Customer perspective

So just for a minute, forget that you have renewable energy products and services to sell, and put yourselves into the shoes of your potential customers.

You've received lots of really annoying cold calls from people trying to sell you solar panels, insulation, offer you free a boiler replacement, and have read some articles about cowboys in the industry, and don't quite know who to trust or believe.

The answer, from a business point of view, is to look at the whole house, ask the homeowner what their goals are and what their budget is, and put together proposals for how you could meet that, possibly phasing it over time so it fits with other upgrades they want to make to their property.

If you're a small and specialist installer, and don't want to diversify, you could seek out complementary companies installing other technologies, and form a strategic alliance.

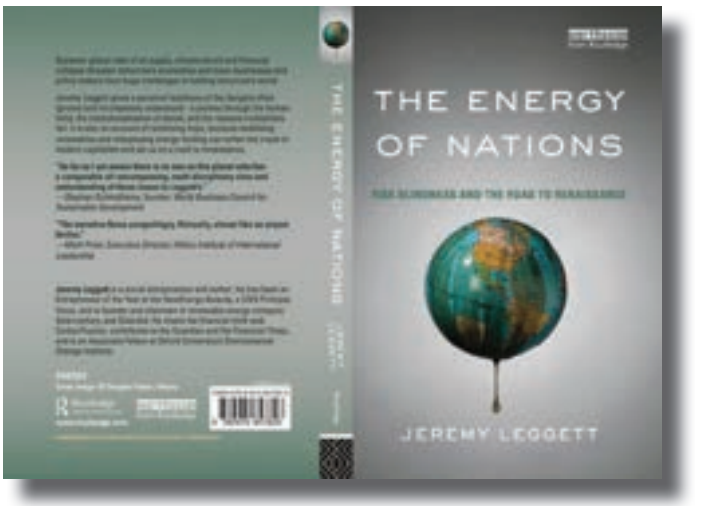
If you find partners who install to the same standard and your company values match, this could be a great way of getting more leads – as instead of each of you just looking for work for yourself; you could pass on leads to each other where appropriate.

When I talk to people who have multiple renewable technologies installed, they often have stories to tell about how getting them to work together was a bit of a nightmare. Diversifying to cover more technologies, or building strategic alliances and working closer with complementary companies is a great way to minimise those problems.

Branching out: Cathy Debenham, YouGen, urges installers specialising in a single technology to diversify or form strategic partnerships to meet the needs of the modern customer

Jeremy Leggett: History isn't necessarily destiny

It happened to the Mayans, Romans and Aztecs but can modern society avoid its own catastrophic failure? The **Solarcentury** chairman and author of Energy of Nations tells Paul Stephen how renewable energy can save humanity from being trapped in a carbon bubble which is about to burst



PS: Many have gone before you to warn of the perils of our addiction to diminishing fossil fuels. Why did you feel compelled to publish your new book at this time in particular?

JL: In 2012, watching capital continue to flow into coal and tar sands, and the new story of shale riches emerging, I wondered how best I could make a personal contribution to sounding the multiple alarms needed. I zeroed in on a lesson of neuroscience and psychology: the one that shows people prefer stories to textbooks. As the narrative unfolds, hopefully it will offer insights into how brains work in the incumbent energy market that is stoking such catastrophe for the world.

***In Energy of Nations* you outline the biggest threats to humanity as oil depletion, climate change and stock market collapse triggered by its valuation of overestimated or unburnable fossil fuel reserves. Which of these do you fear becoming reality the most?**

Oil supply. Society is so very oil dependent. And the willful blindness by the energy incumbency to decline rates in existing crude fields is so acute, the cheerleading about unconventional oil so horribly effective. Most people lap it up as humans much prefer believing in comforting narratives than uncomfortable ones.

What part does renewable energy have to play in averting any possible crisis?

We can soften the landing, if renewables deployment accelerates. Beyond the carbon crash, we can and must lead the rebuilding, amid the ruins.

What message should renewable energy installers take from this book?

The incumbency tends to refer to renewables advocates as insurgents, and much of 'Big Energy' and its political and institutional support base has declared open civil war on us. We need to fight. Every solar panel installed is a recruiting poster for recruits to the insurgency. But beyond manufacturing and installing, we need to organise better than we do at the moment, both to sell our counter vision to the undecided, and to combat the dirty tricks that are - as I describe in the book - being deployed against us.

Is the 'energy incumbency' beginning to wake up to your message that peak oil is now upon us?

Yes. This is a big difference from the run up to the 2008 financial crisis, and crash. Then, only a relatively few maverick economists and far-sighted financial journalists were blowing whistles. Now it is a more numerous group.

Can we rely on humanity changing its ways in time to prevent disaster?

The systemic risks I talk about in energy markets require a clean energy mobilisation akin to the system change in 1939 and 1940 that saw automobile and other factories essentially shut down and replaced with tank and warplane factories. What that system change required was the 'power of context', and that power of context did not materialise until Hitler invaded Czechosolvakia (in the case of the UK). The threat of climate change, a carbon bubble or an oil supply crisis do not yet have a power of context, for many people, and hence we have no critical mass for mobilisation, internationally. We ought to have, given the data. The lessons of 1939 show that we can change very quickly though. We have enough lessons around us to have a chance at showing that history isn't necessarily destiny.

The Energy of Nations: Risk Blindness and the Road to Renaissance is published by Routledge. **ISBN-13:** 978-0415857826

Back with a bang

Ecobuild will celebrate its 10th birthday when it returns to London's ExCeL in March. REI takes a look at what the show has to offer renewables installers who are looking to get ahead of the game.

With the domestic Renewable Heat Incentive (RHI) launching in spring, 2014 promises to be a big year for renewables.

Ecobuild is an opportunity for installers to meet suppliers, merchants, and a whole range of industry experts, and see the latest technologies on the market.

It's no surprise that the RHI will be a major talking point this year, so the 4-6 March should be the first dates in the diary for those who are interested in working with renewables, and making the most of the business opportunities government schemes like the Green Deal and RHI will present.

What's there?

Hundreds of exhibitors will be there from the both the UK and abroad, and all of them will be displaying their latest products, and offering advice on installation and maintenance.

For MCS-accredited installers who work with renewables, this is a chance to speak to manufacturers and suppliers. It's important to know what's on the market, at what price, and develop the right contacts to drive business forward.

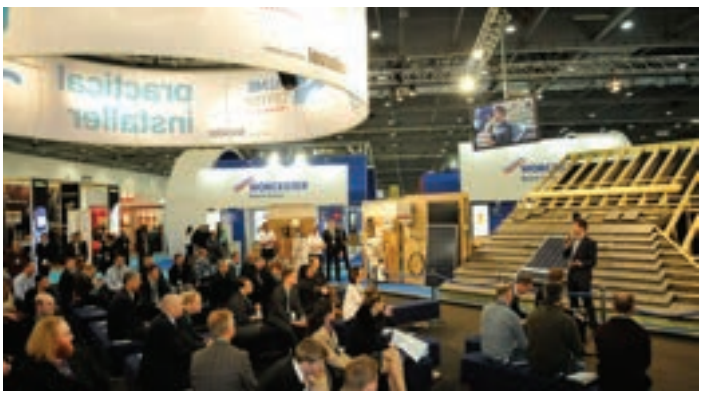
At Ecobuild last year, exhibitors met – on average - 122 new customers. This means plenty of installers discovered new products and expanded their connections, so can they afford to miss out?

Numbers game: Hundreds of manufacturers and suppliers are lined up to give advice to installers on the latest renewable products

Attractions

This time all the content will be on the show floor, so it'll be much easier for installers to navigate. The organisers have created three core show sections: Sustainable Design and Construction, Energy and Future Cities, so visitors who are interested in renewables should head to the energy section.

As well as the exhibits, there will be much larger attractions to visit, including Practical Installer and Solar City.



Expert advice: TV star George Clarke opened Practical Installer at last year's event

Formerly known as the Solar Hub, Solar City – in association with SMA Solar - will feature seminars and practical demonstrations covering all aspects of the solar PV market in the UK. Installers can listen to live debates and practical case studies from industry experts, on topics including smart metering, energy storage, zero carbon inverters and many more.

Practical Installer has been one of Ecobuild's most popular attractions in recent years. In 2014 it's back and bigger than ever, as over 15 of the industry's top suppliers have teamed-up with Plumb and Parts Center to showcase the latest sustainable technologies.

The new layout sees Practical Installer split into four areas focussing on solar, biomass, heat pumps and water efficiency, so visitors can see these products working live, and talk to experts for further advice and information.

Throughout the three days Practical Installer will be offering live demonstrations on installation and maintenance, and advice on how initiatives like the Green Deal, the RHI and Feed-in-Tariff (FiT) are making sustainable products more affordable than ever.

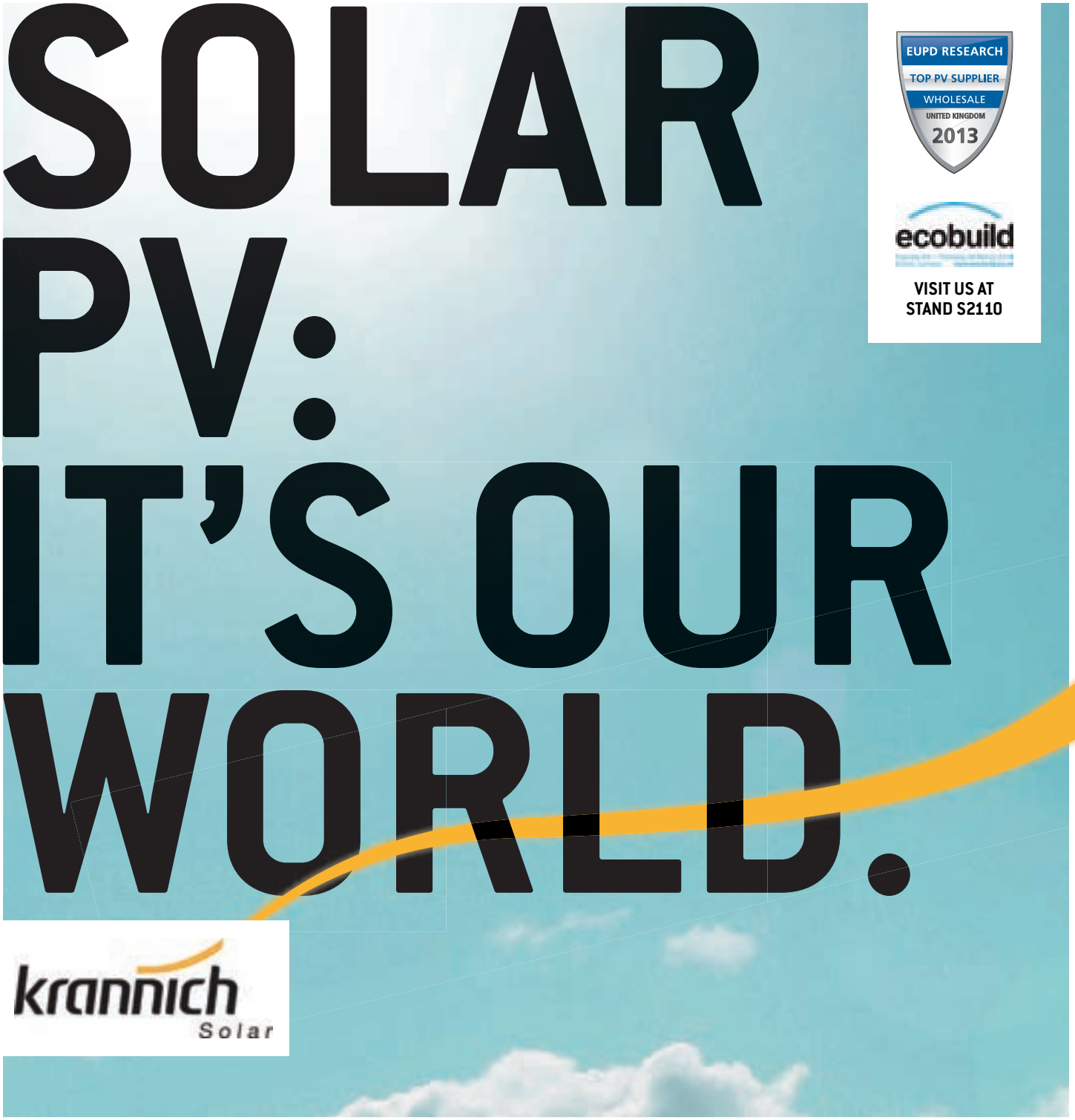
"Taking a couple of days off work to attend Ecobuild is an investment in the future," said Simon Allan, Plumb Center's renewables director. "So it's important for installers to be there.

"The renewables industry is set to receive a big boost with the launch of the RHI in spring, and personally I'd love to see more people fitting biomass boilers, heat pumps and solar thermal.

"That's why we've joined forces with top suppliers for Practical Installer, to showcase renewable technologies and help installers with any questions they have, or advice they need."

Registration

Installers can register for Ecobuild 2014 by visiting the website **www.ecobuild.co.uk.** The site also has lots more information about the event, and all the highlights from last year.



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Ringing in the changes

The Microgeneration Certification Scheme (MCS) recently announced two new initiatives designed to help installers get involved with the Scheme, and take advantage of the opportunities offered by the forthcoming domestic RHI.

Changes to Heat Technology Standards

To support the domestic RHI, MCS has modified the installer standards for the heat technologies biomass, solar thermal and heat pumps.

The largest change is focussed on the addition of Compliance Certificates. This is designed to be viewed as a checklist for installation companies to complete and confirm the suitability of the installation to the relevant MIS standard.

MCS has published on its website (**www.microgenerationcertification.org**) a full list of changes, consultation responses, and the relevant Working Group feedback.

A Clearer Path to Certification

This initiative is aimed at helping installers better understand how to become certified and making it clearer how to up-skill and re-skill in response to changes, such as the introduction of the domestic RHI.

MCS remains a scheme where it is the company that is certified to carry out installations. However, it has always been recognised that a company demonstrates competence mainly through its operatives, whether those operatives have formal training, industry experience or a combination of both. MCS is publishing the competency criteria that the experience and training must combine to meet so that the company can be certified.

MCS now has a framework of roles against which the criteria are mapped so that individuals can understand how the criteria are likely to apply to their role within their company. Most roles can be combined or shared as required – the framework is designed for every size and type of installer company.

MCS will also imminently make available for free on the MCS website a Competency Checker Tool to support use of these frameworks. The qualifications checking and 'Experienced Workers Route' functions it contains can be used to help identify which roles and criteria the installer believes they already fulfil, and prompt the installer to assemble evidence they can present to their MCS Certification Body for evaluation.

The new Competency Criteria and assessment are being phased in from **16th March 2014**, applying initially to new certifications, and with a transition period of up to three surveillance visits for existing installers to work to them. All installation activity under the scheme will at all times have to meet the MCS Standards, giving real confidence to consumers.

The new Competency Criteria, supporting guidance framework, and IT tool will guide installer companies in demonstrating how their staff's combined industry experience and formal training demonstrates the relevant competence for the company to gain certification.

For information regarding the revised Standards and the Competency Criteria project, visit **http://www.microgenerationcertification.org**

Pollard's Patter

Well another quarter goes by and the ever-evolving world of renewables continues to provide challenges from all sides. How consumers are supposed to find their way through the maze of conflicting arguments made from all manner of sources beats me.

We are all influenced by external forces. Opinions are increasingly led by what we see on the TV or online and, very often, what we glean from our friends and relations. These are 'trusted' sources of information; the trouble is that we really don't know how reliable our information is. Let's face it; everyone has an axe to grind and often we hear what we want to hear.

This is why the influence of installers can be extremely powerful. You are the experts working in a market of inexpert buyers. You carry the weight of authority gained by training and experience backed up by accreditation. You can make, or break, propositions by exercising your authority. But you require the trust that markets will provide the commercial opportunities for you to trade profitably and to justify the costs associated with training and accreditation.

We know that trust is hard earned and can be easily lost. False dawns have littered the past with many forecasts of uptake lying shattered on the rocks of failed expectations. Will the domestic RHI provide the stimulus to make a difference? We think so but much more importantly, do you? What I can say for sure is that if there is consumer demand then someone will satisfy it profitably, we'd like it to be you!

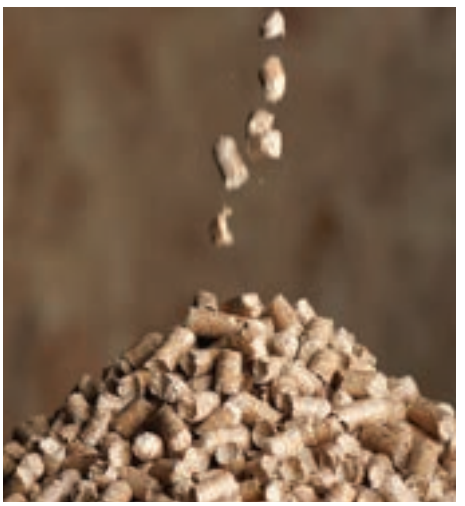
"The future success of Green Deal will rely on a blend of Green deal finance and ECO funding" Paul Joyner, Sustainable Building Solutions p29

Standard deviation

Robert Burke, HETAS, turns his attention to the changes to installer standards recently announced by the Microgeneration Certification Scheme (MCS)

The news that the MCS has announced two new initiatives brings the launch of the domestic Renewable Heat Incentive (RHI) even closer. HETAS has been closely involved with the consultation process, which has resulted in modified installer standards for the heat technologies of biomass, solar thermal and heat pumps, as well as a clearer path to installer certification.

The new installer standards mean that the government can make MCS the requirement for all customers wishing to access the RHI when it is introduced from Spring 2014. The changes are as a result of consultation with MCS Working Groups comprising of installers, manufacturers and trade associations including HETAS. The largest change is the addition of Compliance Certificates which are designed as a checklist for installers which will help determine the suitability of the installation to the relevant MIS standard.



The other major change is a clearer path to certification in order to make it easier for installers to become MCS certified, making it clearer how to up-skill and re-skill in response to the introduction of the RHI. The installer competency criteria combines experience and training, with a framework of roles so that installers can understand how the criteria applies to their job function. To make life easier, MCS will be launching an online competency checker tool, with a framework designed for every size and type of installer company.

The new installer standards mean that the government can make MCS the requirement for all customers wishing to access the RHI

The new competency criteria will apply from March 16 2014, which could affect anyone with existing qualifications who is advised to check with MCS as some older courses may not meet the new criteria. The HETAS H005 biomass installer course was recently updated to meet the requirements of MCS and provide a pathway to MCS certification. The course is nationally recognised and aligned to the National Occupational Standard derived from QCF units. Successful candidates can register with the HETAS competent persons scheme for the installation of log, chip and pellet biomass boilers, pellet stoves and associated equipment. Importantly, for those wishing to take advantage of the RHI, the course can also be used as part of the criteria for approval with HETAS as an MCS installer for biomass.

With over 90 percent of funding under the non domestic version of RHI allocated to biomass it is anticipated there will be similar levels of interest from the domestic sector. With the recent announcement by Department of Energy and Climate Change (DECC) that condensing biomass boilers will be included in the domestic RHI, and with no plans to provide RHI payments for oil or gas installations, many installers are already looking to add renewable technologies to their existing skills.

As the only solid fuel and biomass specialists, HETAS can provide MCS approvals for both products and installers – requirements for all RHI applications. HETAS has already been gearing up for the introduction of the domestic RHI and has launched a new technical helpline, and publishes an annual guide with lists of approved appliances and provides regular technical updates for installers. For further information on MCS installer training, certification or product approvals please visit **www.hetas.co.uk.**

Two minutes with . . .

Q: Who are you?
Gordon Traill, founder and md of the national biomass boiler company Treco. I'm also a Tenant Farmer on a 350 acre farm on the National Trust's Killerton Estate in Devon.

Q: What do you do?
Treco designs, supplies, installs, commissions and maintains biomass boiler heating systems nationwide. We have completed in excess of 600 since we started in 2005, mostly to commercial customers.

Q: Where are you?
Based in Devon, Treco operates nationally and we have literally installed biomass boiler heating systems from the Shetlands to southernmost Cornwall.

Q: How's business at the moment? Hectic, we're right in the middle of the busiest heating season since we started

Q: How could it be better?
For the last three years we have been growing more than 70 percent per annum which makes managing the business very challenging.

Q: Who do you admire in renewables?
I was very impressed with Stewart Boyle's new book *A Sleeping Giant Awakens*, very thought provoking look at the biomass industry.

Q: What's the best business advice you've ever been given?
There are two main best bits of advice I've been given. One was to carefully cost and appraise any new investment opportunity, which has stuck with me. I believe that you need to employ clever and highly qualified people, but this does not always mean that they are right.

Q: How are you going green?
I have installed a biomass boiler system on my farm which heats a listed thatched farmhouse, farm offices, workshops and a pie factory. I also plan to install PV at the farm and offices.

Q&A

PAUL CLARK

Rural Energy

REI: What have you got planned for 2014?
2013 has been a busy year for Rural Energy following the expansion of our partner network and the introduction of a number of innovative new products. Looking ahead we will continue to cement our position as a centre of knowledge for biomass, setting and developing industry standards and leading the way in partner training and educating our customers on the benefits of biomass.
We will also shortly be introducing some exciting new IT systems to make life easier for both our customers and staff.

Q. What do you see as growth areas for renewables?
As a result of the non-domestic RHI, we are seeing growth across commercial premises where there is a requirement for continuous heating and the opportunity to move away from oil or LPG. Demand is also increasing for our packaged plant rooms, as these self-contained solutions have opened up the opportunity for biomass on sites where internal space for housing a plant room and fuel store may be limited.

Q. How is your company cutting its carbon footprint?
We are increasing our warehousing capacity and pre-ordering bulk deliveries from our distributor in Austria to hold both boilers and Augers in stock. This reduces our customer lead times and minimises CO2 levels created from regular deliveries. We are also introducing a new operations system that will allow increased efficiency on the scheduling of our engineers across the UK.

Paul Clarke is md of Rural Energy

CURRENT AFFAIRS

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

The recent publicity over the slow progress over the Green Deal highlights the fact that renewable energy installations are not actively encouraged within the scheme. Renewable energy systems are on the list of eligible technologies for Green Deal finance but they rarely meet the 'Golden Rule' which is that the cost of the loan repayments must be less than the cost of energy saved. This is because Feed-in Tariff income is not allowed to be included within the calculation. In order to meet the 'Golden Rule' the customer has to fund around 60 percent of the total cost and then the rest can be covered by a 'Green Deal' loan. Considering the cost of finance is approximately 7 percent, this is not a very good incentive. If the rules could be changed to allow Feed-in Tariff payments to be taken into account this could give a new boost to both the Green Deal and the renewable energy industry. The ECA has campaigned for this and other changes such as a reduction in stamp duty and reduced council tax or business rates for efficient buildings, including ones with renewable energy systems. Will this happen in 2014? We will just have to wait and see.

Market forces

With demand set to rise, the outlook for the UK PV market throughout 2014 looks bright, says **Steve Pester**, BRE

With the jumps in energy prices that we seem to routinely experience these days, many people are at last starting to feel that the connection between renewables and long term energy affordability is real (although not all politicians appear to have made that connection). This is good news for the industry as it means that there is an increasingly important driver to buy systems for reasons of independence from the energy companies, rather than merely for FIT/RHI income (some people will also buy because they actually care about the planet too!).

The much-awaited domestic RHI will certainly boost the renewable heat market, but there are some interesting little conundrums to be unravelled – for example, is it best to fit a solar thermal system or a bit more PV and an energy diverter to direct any surplus energy into a hot water tank? Issues such as this will no doubt be hotly debated at Ecobuild next month.

The UK is now seen from abroad as one of the top markets for PV and I believe it will continue to strengthen in 2014, with a stable demand for domestic systems and an improving market for medium scale systems. But with any shift towards commercial roof scale systems, it will be essential to ensure that high quality systems are installed in order to maintain the confidence of the market – since the FITs came in we've seen quite a few horrors at the domestic scale, so the establishment of a good quality process for systems larger than 50kW would now be very helpful.

The National Solar Centre, having moved premises to the Eden Project, is now actively setting up its outdoor test site – we'll be running side-by-side comparisons of PV modules and inverters, refining the current thinking on the effects of orientation and tilt of mountings, as well as testing the effectiveness of various cleaning regimes. Its early days, but we look forward to bringing forth some new publications (you may have already seen the planning guide) and welcoming visitors at some point during 2014.

TECH TALKING

Bare necessities

Heat pump expert Bob Long asks why a buffer cylinder/thermal store is essential in any system

Buffer cylinders have a large role to play in the operation of air source heat pumps, but can also be an asset in ground source systems too. Accurate selection of a buffer cylinder is essential to obtain the best result. Too large and the cylinder will waste valuable space inside the property, and too small will prove ineffective.

A buffer cylinder increases the total hydraulic volume of the heating system, storing useful amounts of thermal energy and creating a stable heating effect.

A buffer cylinder promotes the longevity of the heat pump itself, by reducing the number of stop-starts the heat pump will endure in its lifetime.

Soft start devices and inverter driven variable-speed drives, available in high-end heat pumps, have alleviated much of this problem but even these units will benefit from a more stable operating environment.

A buffer cylinder also plays an important role in defrosting the heat exchanger of an air source heat pump (ASHP). A suitably sized buffer cylinder will ensure an adequate supply of thermal energy is available to perform essential defrost cycles, as required by all ASHPs.

Defrost cycles use a large amount of energy over short periods of time, and rely upon the thermal storage capacity of the heating system to supply this energy.

When selecting a suitable buffer cylinder, a number of factors need to be considered.

As an example, we could imagine a 10kW heat pump operating an underfloor heating system with a circulating water temperature of approximately 35°C. To maintain this condition, the heat pump controller will probably be adjusted to cycle between low and high limits of 38°C to 41°C, and maintain the buffer cylinder within this temperature range.

The minimum size of the buffer cylinder is generally defined according to size of the heat pump, plus the rate at which the heat pump will affect the temperature of a specific volume of water.

During a defrost period, the example 10kW heat pump should be capable of removing a similar amount of energy from the thermal store, for the duration of the defrost cycle. Ideally, the energy transfer required to complete a defrost cycle should be available without reducing the temperature of water inside the thermal store to below +30°C.

During defrost periods it is advisable to stop the circulating pump feeding the emitters to avoid any negative heating effect, or impose additional load on the thermal store.

An ASHP's defrost cycle will not generally exceed 10 minutes, during which time a buffer cylinder of 300 litres capacity might expect a temperature drop of around 8°C.

In this particular instance, a system operating an average water temperature of +40°C would finish the defrost with a residual temperature in the buffer cylinder of about 32°C.

Heat pump manufacturers employing inverter-drive technology may say a buffer tank is not required, due the power matching potential of inverter control. The absence of a buffer cylinder can be detrimental during defrost periods, however, where the energy to complete a defrost cycle must be extracted from a limited, low volume of water contained in the emitter circuit.

Under this circumstance, the heat pump is likely to complete the defrost cycle with a water temperature significantly lower than ideal.

Incorporation of additional energy sources can be easily achieved with the assistance of a buffer cylinder/thermal store. The buffer cylinder can be fitted with a number of direct and indirect input/output connections to accept energy from other renewable energy sources, such as solar thermal panels or log burners.

A suitably designed passive heat exchanger, embedded in the buffer cylinder can also provide economical pre-heat for the DHW systems.

Although a buffer cylinder represents an added cost, it provides good system stability, together with all the flexibility needed to incorporate other renewable energy sources at a later stage.

Making an exhibition of ourselves

Kim Mann, Krannich Solar, discusses whether large industry exhibitions, such as next month's Ecobuild, are still worth making time and effort for in a maturing market

The footfall, enthusiasm and sense of aspiration at exhibitions in 2011, when the PV industry was first blossoming, was incredible. Everything was shiny and new, the PV industry was an exciting place to be and - until Greg Barker's speech at Solar Power UK put the proverbial 'spanner in the works' that October - we were all busy meeting the manufacturers, suppliers and customers with whom we were going to prosper as our industry flourished.

Jump forward to a somewhat more challenging marketplace in 2014, and it's perhaps not surprising that exhibitions are often viewed with scepticism or ambivalence. They're expensive and time-consuming for exhibitors, often repetitive and logistically tiresome for visitors and they distract us all from our day-to-day business activity – not something any of us take lightly.

So are they still worth bothering with? Absolutely. Every time I go to a show such as Ecobuild, I'm struck by how refreshing it is to get face-to-face with prospects, customers and suppliers, in an environment where everyone is slightly removed from the day-to-day pressures of business and can remind themselves of the bigger picture.

Fundamentally, it all comes down to communication. As well as meeting new customers, we also get to find out what our existing customers love about us and what we could do better. Installers get to see, touch and compare products, manufacturers and suppliers all under one roof and in a way that is so much more tangible and engaging than any datasheet, website or brochure can ever be.

Healthy competition in an environment like this drives industry progress and excellence. So I invite you to join me in breaking out of the office routine, accepting the achy feet and tolerating the busy roads and trains because I believe that exhibitions are truly valuable for visitors and exhibitors alike.

See you at Ecobuild!

Talking point

Liz MacFarlane, Zenex Solar, urges installers to move early and get involved in the fledgling but lucrative market for large scale solar

Greg Barker recently spoke at a BPVA event and told industry attendees that the UK is the most exciting solar PV market in Europe.

He urged us forward and predicted total capacity to rise to 3.5GW by the end of March, with a note of caution aimed at preserving public support by avoiding development of inappropriate green field sites.

My own feeling is that the large solar field arrays are a vital part of us hitting our targets and that, in general, public support is good. Solar will become an acceptable part of our landscape and we shouldn't shy away from that. There is no benefit to anyone in closing off any avenue for solar however I do think perhaps there should be more emphasis on large commercial roof installations. It makes sense to me that industrial or retail premises with high energy usage and large open roof space provide the perfect opportunity for solar investment. It also seems sensible that the grid is less likely to creak in these urban locations. As foreign developers approach the UK solar big-field market, I'm hoping our own UK investors and installers are leading the way. Meanwhile, the commercial roof space market is an option for proven installation companies of all scales. With this in mind, we are helping our own installer customers to grow the market by enabling them to fund such projects. We have recently launched Zenex Partner Projects, aimed at working with installers to help them fund solar schemes which might otherwise have been out of their reach in terms of cash flow. We're all doing our bit to drive support for solar and as Mr Barker said: "I'll be glad when solar is no longer seen as 'alternative' energy."

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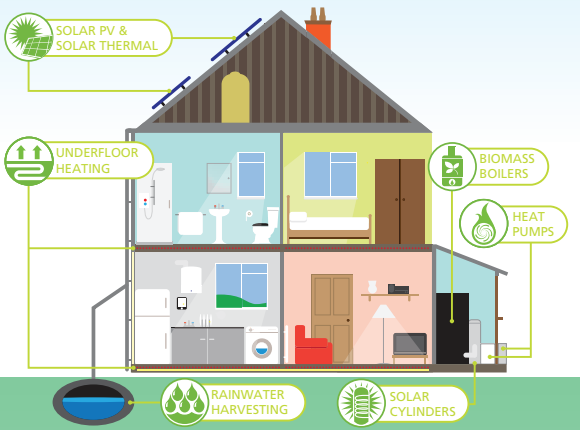

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Less is more

Microinverter technology is ideally-suited to the UK market and local climatic conditions, says Enphase's UK regional sales director **Simon Baggaley**

2013 was another record year for solar PV, with considerable growth all over the world. After a few turbulent years the UK is firmly on track to achieving the government's informal target of 20GW by 2020. What's more, the public is on side with popularity ratings typically over the 70 percent mark. In the past few months the consumer has taken centre stage in the energy debate and this will undoubtedly continue throughout 2014. Reducing the cost of installation and making solar PV more accessible and visible will build on recent successes and reaffirm that this is a rapidly developing technology which will provide an increasing proportion of the nation's energy mix.

Solar panels are increasingly popping up on roof-tops across the UK and gradually becoming ubiquitous. As energy bills soar, people are warming to the idea of taking production into their own hands; but for too long issues around cost – inflated by traditional news outlets – presented an obstacle. Enphase is keen to capitalise on the opportunity presented to solar PV by a nation that is thinking differently about energy, and this is not only spurred on by costs, as clean energy is in itself attractive.

Enphase's announcements last month of an expansion of new hardware and software products that lower solar PV system installation and operations costs for solar PV professionals will therefore be welcomed news. New hardware includes a Wi-Fi option for the Envoy Communications Gateway for faster and more flexible installs. In addition, new Enlighten software products, Enlighten Manager and MyEnlighten, are now available. Enlighten Manager, designed for the solar professional, streamlines operations and maintenance processes and enables efficient management of multiple Enphase systems, while MyEnlighten connects system owners to their solar experience through an interface that displays energy production, system health, and environmental benefits. What is important, after all, is to make the technology more consumer-friendly if it is to be adopted more broadly.

This technology is underpinned by microinverter technology and represents Enphase's pioneering work in marrying hardware, communications and software to overcome issues of cost and reliability. Ill-informed public opinion can too readily ridicule the notion of solar PV generation of power in a destination such as the UK. Yet, on this front too, microinverters are changing perceptions as they are well suited to the UK's fluctuating weather since they generate power through rainy climates and operate even in the low light conditions of the notorious British overcast skies. What's more, microinverters are built to withstand the freakish weather we have recently seen in the UK as they are IP67 rated, underscoring the level of protection that the enclosure provides against the ingress of water.

Our technology enables a totally different way to design, install and maintain solar PV installations, with the result of a completely networked solar PV system that increases and maximises the benefits of solar PV. This translates into higher energy production, safety, increased reliability and a high level of intelligence of the system. For those who install Enphase this means an easy solution. For consumers this means clean, reliable, cost-efficient power at a time when alternatives matter most. 2014 will be the year for solar PV to take the initiative and convert its gains in 2013 to further rewards. Here at Enphase, we wish you all a successful year.

Cutting edge: Enphase is working to overcome installation issues of cost and reliability through its recent product innovations, says UK regional sales director Simon Baggaley

Enphase is keen to capitalise on the opportunity presented to solar PV by a nation that is thinking differently about energy

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Rule Britannia

Sven Armbrecht, sales manager at LG Solar, explains why the future looks bright for solar in the UK

Increasing consolidation in the solar market, anti-dumping disputes between Europe and China, and European governments cutting support for the solar industry left many wondering if the market in the UK had flatlined. However, recent facts and figures tell a very different story.

Grid parity

Even though the market may still need some support in the short term, it is already very close to grid parity.

The growth of the market has been extraordinary and solar power has been the biggest source of new electricty generation for two consecutive years now.

And, according to the most recent figures from the Department of Energy and Climate Change, almost half a million homes in the UK already have solar panels installed.

Falling costs

Numbers continue to increase with households facing sky-rocketing energy prices as the cold season draws in and decreasing installation costs make it more affordable. Today, it costs around £7,000 for your average household to install panels – much less than in recent years.

And further growth is on the horizon. The Solar Trade Association aims to double the number of UK households installing solar panels to 1m – this could be achieved by as early as 2015.

Now more than ever the time is right for LG Solar to expand activities in the British market and increase resources

Now more than ever the time is right for LG Solar to expand activities in the British market and increase resources. People understand the necessity to switch from fossil fuels to renewable energy – they are the future of power supply. More PV modules have been installed than even the most optimistic people expected. It is a win-win situation after all as solar power benefits the wallet and the environment.

Product development

The residential market will remain stable over the next few months, with potential buyers seeking higher efficiency modules. In response to this market demand, we have increased the efficiency of our modules by 20 per cent over the last three years, with Mono X NeoN having the highest output per m^2 of any LG Solar product.

With the healthy state of the residential market, we want to support distributors and installers and help them take advantage of the growth opportunities. We plan to increase our visibility, organise further training and events for installers and distributors, and offer more products that are tailor-made to fit the market's needs. At this stage, our stakeholders are looking for a reliable partner and with our new programme we are aiming to be just that.

Looking ahead

So, what does the future hold for the solar industry? We will see investments in technology development that will improve the efficiency of modules and increase demand for smart home electronic systems which integrate modules into more home products – participating in the future of the 'smart' home.

So, even though there is more consolidation to be expected, we expect solar to remain at the heart of the renewable energy market debate and continue to grow over the next decade.

Growing season: Sven Armbrecht, sales manager at LG Solar, supports the STA's vision to double the number of UK households with solar PV over the next two years

The residential market will remain stable over the next few months, with potential buyers seeking higher efficiency modules

The ugly truth

Ivan Saha, president and chief technology officer at Vikram Solar, explains what other module manufacturers are said to deny: The phenomenon of Potential Induced Degration

What is PID?

Potential Induced Degradation (PID) is principally observed on the negative terminal end of strings connected to floating-ground PV inverters and can cause severe degradation in power output in modern PV power plants (ground mounted as well as rooftop). The phenomenon is caused by migration of mobile ions from the glass to the p-n junction of the solar cells under high negative bias. The current protocols of module qualification under IEC 61215/ IEC 61730 do not include any test to evaluate this degradation. A special test is being contemplated under a draft standard IEC 62804 to address the issue.

Causes and how to control it

Over the last decade, internal device construction of crystalline solar cells has changed for the sake of efficiency enhancement. This modification coupled with the use of thinner encapsulant (EVA) of low volume resistivity has contributed to making the module more susceptible to PID. At a system level, string voltage has increased from 600V to 1000V and beyond over the last decade. This has also increased the risk of modules getting affected with PID. A recent trend in using 'transformerless' inverters has also added to this risk. The main causes of PID can be attributed at three levels:

Cell level

It has been observed that higher emitter sheet resistance (and a resulting lower emitter thickness) increase the chances of PID. With an appropriate combination of anti-reflection coating (SiNx) thickness and refractive index, the PID impact on the cell can be minimised. Apart from that, a higher base wafer resistivity of wafer gives a wider depletion layer at the p-n-junction which is less prone to PID shunting.

Module Level

The dielectric constant, volume resistivity and thickness of the module encapsulant (EVA) are important parameters that can impact the effect of PID. Also, the chemical composition and the ratio of metal ions in the module glass have a direct impact on PID.

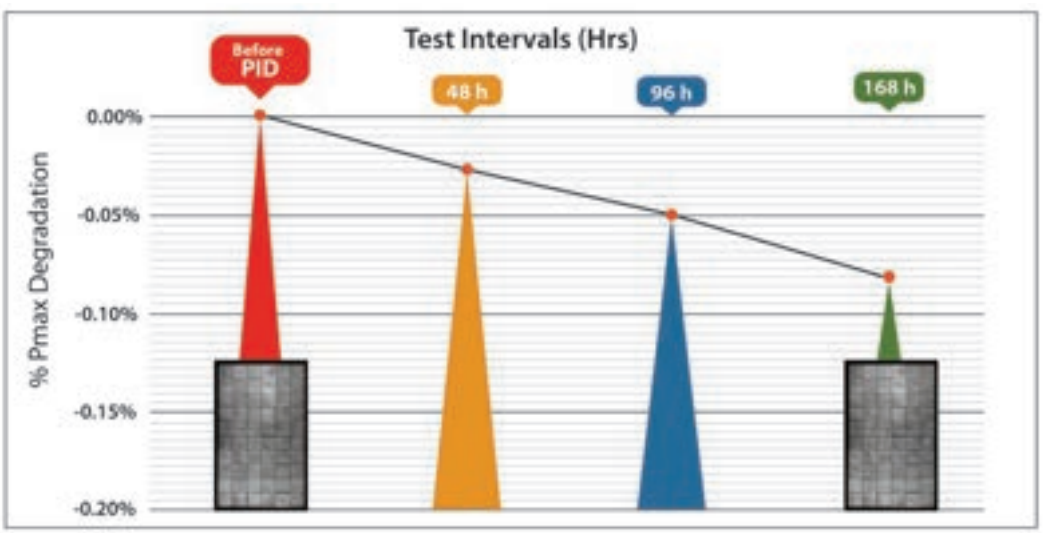
System level

The use of inverters with a ground connection reduces the effect of PID. In floating ground inverters, a negative terminal grounding kit recommended by the inverter manufacturer will ensure that the charge built up during the daytime is effectively dissipated during the night.

Evaluation at Vikram Solar

The R&D team at Vikram Solar carried out tests to understand the effect of materials, processes and environment factors on module PID. This research helped to set up an internal reliability protocol. The test protocol is proprietary to Vikram Solar and shows a good correspondence to the Draft Test Protocol from IEC. Based on this study, a performance ranking was applied to various raw material combinations.

Power degradation (as a percentage) and EL images of modules with the best Cell+EVA combination as tested by Vikram Solar



The best combination showed a degradation of only 0.08 percent in power output.

PID testing at TÜV Rhienland according to IEC 62804 (Draft) standard confirmed that Vikram Solar modules have a degradation of 0.2 percent against the pass criteria of 5 percent. Being the first and only Indian manufacturer to achieve this distinction, Vikram Solar has held seminars and training sessions to educate distributors and installers about the PID phenomenon.

Power of endurance

Markus Schaefer, Voltec Solar's senior vice president, sheds light on the PV manufacturer's decision to increase its presence in the UK market despite a tough economic climate

For the PV industry, on a global scale but especially in Europe, the year 2013 has again been a very difficult year. Many well known PV manufacturing companies gave up or ended up in bankruptcy. When I think back, I remember many potential customers who used to say: "I prefer going with the big names, as I can be sure they will still be there tomorrow." Well, reality turned out to be exactly the opposite. Many of the big names have disappeared and some will still go down. The consolidation is not over yet, it has rather reached more downstream players like EPCs and installers. Meanwhile some of the smaller players – like Voltec Solar – managed to come through. Another interesting observation is that most of those who came through these difficult times are not solely dependent on the solar industry but have other activities. Again, this is true for Voltec Solar where on a group level there is a 20 year history in the furniture and flooring business.

Unfortunately, it takes time for the industry to understand the importance of diversification and many players have had a strong tendency to stick to what they're used to. So it does take very strong perseverance and a tough fighting spirit to live through this.

At the same time, the markets developed a thinking that prices which are under the cost of the products sold should be the normal market price. Few seem to understand the simple truth that such a situation will mean a company needs new money at some point - and if that new money does not come it means death. Some others simply don't understand that this is not healthy and is only of a temporary nature until all companies are gone that sold at loss making prices for too long.

Total system costs still need to come down further in order to address the financial needs of those ready to invest into PV

It is also reality that total system costs still need to come down further in order to address the financial needs of those ready to invest into PV under the respective circumstances of each country. So there needs to be a continued strong effort to do everything possible to bring costs down further.

In Europe, PV markets have already changed dramatically. Installation rates in Italy are near to non existent (down from 9 GW in 2011) and Germany, which had 7.5 GW installed each year for three years in a row, will end up at around 3.5 GW per annum and a further drop is likely. That makes the PV market in the UK at about 2.4 GW per year a likely candidate to become one of the strongest, if not the strongest, PV market in Europe. That is one of the reasons why Voltec Solar decided to move into this market and we are very glad to have Wagner Solar UK as our distribution partner in the UK.

Pole position: Markus Schaefer, Voltec Solar, predicts the UK will overtake Germany and Italy as Europe's strongest PV market

The UK market is also showing an increasing appreciation of strong values in a manufacturing company. For example Voltec Solar offers a 20 year product warranty and is backed by re-assurance company Munich RE. Voltec Solar is in the strongest position it has ever been in since its foundation in 2009. The factory is well stocked and production capacity is due to be increased so that Voltec Solar is here to stay and to serve its customers in the years to come.

Green party

Phyllis Prior Boardman B.E.M, Green Deal Consortia, says 2014 will be a year to celebrate for Green Deal as planned reforms drive the scheme to new heights

The 2014 New Year's Honours List rewarded individuals for the first time by mentioning energy efficiency work relating to the Green Deal. This signifies the start of this credible new market where Green Deal will bring about ground breaking and amazing results. A fitting reminder on what the successes of Green Deal can bring to the UK - a nation that will be rich with job opportunities and warmer cosier homes. So let's keep the optimism alive!

The Green Deal is all about providing householders with advice on how to implement energy efficiency measures in their homes. And the scheme has certainly boasted many successes to date. Up to end of October 2013, a total of 388,128 measures were installed in around 336,000 properties through ECO, Cash Back and Green Deal Finance. A total of 117,454 Assessments were lodged by end of November 2013 and 1,478 households had Green Deal Plans in progress. In addition, 10,170 Cash Back vouchers were issued, valued at £2.3 million, following installation of the measures.

Yet since its launch in January 2013, there has been increasing adverse media coverage of Green Deal. The unwelcome and damaging negativity appears driven by a pre-conception that the policy framework is flawed. This is one reason why government is reforming and renergising the Green Deal in 2014.

Nothing great is achieved without enthusiasm. And government is displaying plenty of enthusiasm by positively addressing this negative publicity with a revised campaign, the first phase being delivered ready for spring's usual wave of home movers. Business champions together with a new branding platform and a comprehensive communications strategy are set to strengthen the campaign with better resources and innovation. This vibrant way of marketing will promote Green Deal from a totally different perspective in order to boost the take up of Green Deal.

2014 will see blending as a major priority and will be the key driver to maximise uptake of Green Deal

Whilst the Energy Companies Obligation (ECO) has been successful in driving forward the number of households having energy efficiency measures installed, Green Deal Providers have struggled to do so, especially with the all important blending of ECO and Green Deal finance in offers to householders. Therefore, 2014 will see blending as a major priority and will be the key driver to maximise uptake of Green Deal. Blending will help keep ECO costs to a minimum which is of particular importance to ECO's continuation post 2015. With a push for blending, Green Deal Providers will be in a position to offer attractive packages for whole house retrofits. Blending will also kick-start the Community Green Deal, it's funding having quadrupled to £80m in the Autumn Statement.

Reforms to Green Deal processes and/or legislation are also on the 2014 horizon. Any changes will aim to make a Green Deal offer to householders more fluid, simpler to operate, lower in cost and more competitive. For example, the Golden Rule. Currently, some householders are facing large upfront contributions especially if they are not eligible for ECO subsidy. One solution will be to reflect real fuel inflation so householders can expect to make savings without impacting the Golden Rule calculation and amount of finance they can borrow. Likely areas of reform too are the current barriers such as multiple approval statuses for businesses entering the market. Entry can be a costly operational start-up, creating complex contracts and difficulties with compliance.

New markets take time to establish and Green Deal is no different. Its reform will drive forward expansion and growth in the energy efficiency market. There are definite signs that industry is keen to participate in 2014 and take advantage of opportunities, with householders being further inspired to make their homes more energy efficient. 2014 is looking extremely good for Green Deal!

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Green Deal, one year on

As Green Deal reaches its first birthday, REI talks to Plumb Center's renewables director **Simon Allan** about whether it's been a good year for the government's flagship environmental initiative

Since its launch in January 2013 the eyes of the industry have been fixed on Green Deal, and it's easy to see why. The fact that Britain tops the league table for fuel poverty in Western Europe makes it's clear that steps need to be taken to make our homes more energy efficient.

But one year on, Plumb Center's Simon Allan thinks it's been tough for Green Deal.

"When you look at the last election, both the main parties went in with plans for a pay-as-you-save scheme," Simon explained. "So there's recognition that we need something in place to improve the efficiency of our buildings.

"That's where Green Deal comes in and people are talking about it as a 20-year-plan, but it's been a disappointing start.

"Fortunately there are positives to take from 2013 and I see the difficult start as a small hiccup, not a terminal problem."

How to improve

It's fair to say there hasn't been a huge demand for Green Deal, with only 626 going 'live' by the end of December - which means the measures have been installed and the householder is paying the Green Deal Finance money back.

But Simon thinks longevity is the key for initiatives like this, and a change of tactics could lead to more success.

"We're not getting thousands of installers saying: 'I really need support for Green Deal because all my customers are asking for it'," Simon added.

"So we're delighted the government has acknowledged this and plans to simplify things in 2014.

"DECC is also looking at alternative policies surrounding Green Deal warranties, which is a good thing. Plumb Center is a Green Deal Provider, but there's a lot of obligation placed on providers surrounding insurance and back-warranties.

"It would be very difficult for us to supervise every installation, and to ask us to warranty that on every occasion adds more cost. So it's encouraging DECC is planning to make it easier for Green Deal Providers."

RHI

The domestic RHI is due to launch in spring, which gives people the chance to earn money for the renewable energy they create. Biomass boilers, heat pumps and solar thermal are all covered under Green Deal, so consumers could qualify for both initiatives.

"It is also our job to make it understandable for people," Simon explained. "We're looking at ways to make things crystal clear for consumers, so they can think: 'OK, I'm taking on a loan with Green Deal Finance, it'll cost me X, but it'll save me Y and in addition to that I'm going to get an income of Z.

"I think the coming together of RHI and Green Deal is exciting for us, and installers who can explain it to consumers in simple terms."

One year's time

So what does Simon think a good year for Green Deal would look like?

"I'd love to see lots more Green Deals being done as a consequence of the RHI. People who ordinarily couldn't raise the finance for renewable heating systems could use Green Deal finance. For me that would be a great result.

"I'd also like a process that's simple and streamlined. If you look at the world of personal finance, you can walk into a car showroom and drive off with a car in two or three hours, and that's the kind of level of service the Green Deal Finance Company needs to be offering to the market very quickly."

Slow burner: Plumb Center's renewables director Simon Allan describes a sluggish first year for Green Deal as a 'hiccup' rather than a terminal problem

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High hopes

Paul Joyner, director of Sustainable Building Solutions, part of the Travis Perkins Group, argues that Green Deal has a huge amount of unrealised potential to be an industry changing initiative

Despite there being no official Green Deal targets, climate change minister Greg Barker stated last March that he wanted 10,000 Green Deal plans signed within the first year. This figure was hugely ambitious, especially when considering that this was one of the most complex schemes ever introduced in this country.

Demand for the Green Deal has been vast; more than 100,000 Green Deal assessments are testament to that. If you look at the number of assessments completed which have then led to energy efficiency improvements, the statistics look very promising.

Teething problems

One of the main reasons for the slow start that the Green Deal is experiencing was the relative difficulty in accessing finance. We were advised that finance processes would be available in an automated and systemised way, but this just wasn't the case.

The Green Deal Finance Company has been slow to deliver a scale solution which clearly has increased frustration of those providers who want to engage in the market.

There has also been some unfair criticism of Green Deal in comparison with the results achieved by the Energy Company Obligation (ECO) scheme. As intended, ECO has been vital in helping to move the Green Deal forward as it specifically targets those with the greatest need for support as energy prices continue to rise. The future success of the Green Deal will rely on a blend of Green Deal finance and ECO funding. With this in mind, there is an argument that more consumers would have signed up to the Green Deal had the Green Deal mechanism been in place along with the ECO. It is also widely thought that if the two components had been available and working at the same time, then the recent issue about the cost of ECO would not have arisen, as the market would have supported the investment and given bill payers a better return on the levy.

It's clear to see that Britain's homeowners are serious about making their homes warmer

The strength of the ECO scheme is already being seen. Recent statistics show that more than 310,000 measures have been installed in 273,000 homes since the start of the ECO schemes, with the majority being loft and cavity wall insulation in addition to boilers delivering real benefit to those in greatest need.

Positive thinking

With 273,000 properties made more energy efficient this year thanks to the Green Deal and ECO, it's clear to see that Britain's homeowners are serious about making their homes warmer, whilst taking control of their energy bills.

Sustainable Building Solutions, along with the whole Travis Perkins Group, are huge supporters of the Green Deal and believe that reporting negatively on its achievements to date will only present more hurdles. The Green Deal has enabled us to put an accreditation in a regulatory environment, helping the industry to accurately deliver energy and cost savings. I am confident that once the finance is in place and easily accessible, the scheme will begin to realise its true potential.

In the mix: According to Sustainable Building Solutions' director, Paul Joyner, demand for Green Deal will soar once efforts are made to simplify access to funding, including merging it with ECO finance

Green Deal Plans after 12 months

- Unofficial target 10,000
- Actual number of plans 462

Mind the gap

Jed Smith, head of business support services at Specflue, argues for an urgent increase in training capacity if future demand for renewable energy systems is to be met and the sector's reputation upheld

As the government strives to introduce the domestic RHI and promotes the benefits aligned with Green Deal, one question remains unanswered – where will the next generation of renewable engineers come from?

There are mixed views on the RHI and the success of Green Deal. The skilled renewable engineer is an integral part of the debate and the capability of colleges and private training centres to meet the potential demand for new renewable engineers needs careful consideration.

Private training providers like Specflue can react to markets more quickly and tend to adopt a more commercial focus than colleges. However, there is one big stumbling block that restricts the development of a skilled labour market and prevents the closure of the skills gap - the investment required to setup and seek approval from the relevant awarding bodies. The need for the engineer to be part of a CPS, MCS approved and a Green Deal Installer is costly both in time and money.

This is where the training provider comes in. As well as demonstrating a return on that training investment, we must be delivering qualifications at QCF standard to ensure the engineer can become MCS registered.

The need for engineers to become renewable experts is a key part of the

It's not all bleak, there are training providers out there that actually care about the service they provide, the quality of the qualifications they deliver and value for money

Generation game: A significant increase in investment is needed to train the next wave of installers, says Jed Smith, Specflue's head of business support services

government's plans to meet the carbon reduction targets and the stark reality is that there are not enough approved training providers to be able to meet the initial potential demand once the domestic RHI goes live. The risks are obvious with installations being carried out by unqualified companies, placing the homeowner in danger. Not to mention the damage this will do to the reputation of an evolving market!

It's not all bleak, there are training providers out there that actually care about the service they provide, the quality of the qualifications they deliver and value for money. But, more needs to be done to encourage further investment in the infrastructure needed to support the renewable installer sector. Without this, the overall growth and numbers of renewable technologies installed within the UK will be considerably restricted. This in turn will have a negative impact on carbon reduction targets and the uptake of Green Deal and the RHI.

Breaking barriers

Julian Martin, founder and ceo of ICE Renewables, says 2014 will be a strong year for the wind industry despite an expected cut in the Feed-in Tariff

According to recent studies by Farmers Weekly and EON, just under half of farmers said that tackling rising energy costs was a key priority for 2014, with 60 percent of farms planning to do so in the coming year. However, farmers reported that managing energy use was complex, Feed-in Tariff structures were complicated and tackling energy use too time consuming.

With wind turbines seen as the most profitable renewables investment, I highlighted what the barriers were and how to overcome them at the Farm Business Innovation Show at London Olympia in November.

Some barriers to entering the market are real but some are in fact only perceived.

High standards: Julian Martin, ceo of ICE Renewables, chairs Renewable UK's Small and Medium Wind Strategy Group which is tasked with setting standards for wind turbine installations

Problem solving

There are obvious site constraints such as proximity to airports and neighbours and ecological barriers. Technical barriers can include wind speed and turbulence, grid and capacity, installation constraints and the need to have a good operations and maintenance strategy.

However, the sector is increasingly finding that one of the main barriers concerns delays in the planning and appeals process. 65 percent of wind projects are still getting through planning (eventually), but the time delays and difficulty in accurately predicting the success of a planning submission is putting customers off even entering the process, where planning costs for medium-sized wind projects can be in the region of £25,000.

Increasingly, turbine owners also are worried about not upsetting their neighbours.

Difficulty in accurately predicting the success of a planning submission is putting customers off

Interestingly, in reality, research show that 7 in 10 people would welcome a wind turbine near to them.Campaigns like *Stand up for Wind, know the facts* provide simple tools to help remove the myths surrounding wind and provide an excellent education resource.

Profit leader

Companies such as ICE Renewables have experienced a strong surge in pre-accredited Feed-in Tariff (FiT) wind turbine projects adding to a strong pipeline for 2014.

However, in April 2014 the sector is expecting to see a cut in the FiT, but wind turbines will still remain the most profitable renewable technology and the FiT is still likely to be one of the highest rates across Europe.

The industry is continuing to work on reducing total installed project costs, effectively tracking any degression that might be seen in coming months. At ICE we have done this through continued process improvement. We remain committed to offering competitive Power Purchase Agreements via our partners and value for money products and services for new and existing customers.

A good operations and maintenance strategy is increasingly a priority for manufacturers, developers and customers as it can extend the lifetime of your turbine, reducing costs and increasing availability. Nightmare stories of customers being left with turbines not working, no proper operations and maintenance contracts, a lack of turbine parts and installers who have walked away are real issues facing the industry.

The way ahead

The industry trade body, Renewable UK, has set out to improve medium wind standards and the small medium wind strategy group chaired by ICE Renewables has been tasked with developing these standards. There will be a national MCS approved medium wind standard in 2014 and an international IEC medium wind standard later in the year which will cover turbine design, site assessment, installation and operations and maintenance across the whole of the medium wind sector.

So overall there is a lot of opportunity for farmers to take advantage of wind energy in 2014, despite the anticipated change to the FiT. Improved processes and standards will also help drive industry improvements, which will only be to the advantage of the customer.

Question time

REI speaks exclusively to **Patrick Allcorn**, head of RHI at the Department of Energy and Climate Change (DECC), about all aspects of the domestic RHI ahead of its imminent and hotly anticipated launch

Q1 Are we any closer to a definite introduction date for the domestic RHI?

The scheme is still on track to be launched in the spring of 2014. We cannot be more precise at this time as the remaining legislative steps are not within our gift. We appreciate the uncertainty this creates, and are working hard to clear the remaining legislative hurdles as soon as possible. As soon as we have a date for launch, we will make an announcement.

Q2 What will be done to promote it?

We are currently busy organising a series of events building up to the launch. We will be attending a series of tradeshows up and down the country to talk directly to installers and consumers. This will include presentations from DECC and Ofgem, as well as Q&A sessions and 'ask the expert' areas. More details of exactly where and when these will take place will be confirmed soon, but we hope to speak to as many installers and consumers as possible.

Q3 With the RHPP due to expire in March, is there an argument to retain it to assist with upfront costs?

There are no plans to extend the scheme once the RHI has been launched. The RHPP was extended in March 2013 and so far has supported over 17,000 renewable heat installations, with several thousands more expected this year in private and social housing. The scheme will close on March 31 2014 and householders are encouraged to apply now before it's too late. For further information visit the Energy Saving Trust website.

Number crunching: DECC estimates that its budget can support 35,000 installations under the domestic RHI within the first 12 months of the scheme

Q4 Miss-selling of heat technologies has the danger of leaving homeowners cold and with large heating bills. Are you strengthening the penalties to ensure that there is a clear deterrent to such behaviour?

Certification of both products and installers in line with the Microgeneration Certification Scheme (MCS) or equivalent scheme is a key condition of the RHI. This ensures that people who buy renewable heating systems are covered by consumer protection schemes governing the products and their performance, as well as the quality of the installation and service they receive from the installer. Consumer protection is provided jointly by the MCS product and installer standards and the Renewable Energy Consumer Code.

Q5 What safeguards have you put in place to ensure that the software used for the metering and monitoring packages is accurate?

We do not consider that there is a high risk that data platforms will intentionally manipulate data. However, the requirements for viewing platforms are inside MCS's Domestic RHI metering guidance, which is referenced in the MCS solar thermal, biomass and heat pump installer standards, and therefore falls under the surveillance regimes of MCS Certification Bodies. In addition, customers will be able to compare the information on their meter display with what is being presented on the data platform they are viewing.

Q6 Will householders be able to access their data online and are there guidelines that ensure it is easy for them to understand and interpret, so that they are not wholly reliant on installers to explain it to them?

Yes, householders will be able to access their data from Metering and Monitoring Service Packages (MMSP)s online. Our regulations and the MCS domestic RHI metering guidance set minimum standards for what must be presented. Customers with MMSPs will also be able to request all of the information collected by the MMSP in case they want an independent person to look at it.

Q7 Are rates of return compelling enough for landlords where savings on running costs are accrued by the tenant?

Actual rates of return for a given installation will vary depending on the precise circumstances – type of technology, what is being replaced, occupancy and lifestyle of the homeowner and so on. It's right to say that in the case of landlords any fuel cost savings will most likely benefit the tenant. There are many reasons why landlords (particularly in the social housing sector) might chose to install renewable heat in their properties, financial return being just one of those. DECC is keen to see widespread take-up of the RHI in social housing and will work with the sector to remove any barriers.

Q8 Dis-incentivising landlords will surely do little to alleviate fuel poverty. Does the policy take into account that installation costs per kW will be much higher for smaller social housing properties than in larger private properties?

$64,000 question: DECC remains tight-lipped over an exact launch date for the domestic RHI until all legislative steps are completed

As part of the RHPP we ran several Registered Social Landlords (RSL) competitions – last year successful social landlords shared funds of just over £7million which translates into around 2000 renewable heating kits. We believe that the domestic RHI, when launched, will represent a good investment for landlords and we look forward to many more renewable heating kits being installed.

Q9 Will the domestic RHI always apply to mains gas properties or will RHI be modified in order to benefit off gas properties-only due to potential funding constraints?

The domestic RHI will be open to both on gas and off gas grid properties, although those off the gas grid are likely to see the largest benefits.

Courtesy of NIBE

Final push: Homeowners should be encouraged to make final use of the RHPP when selling systems to them before its confirmed expiry date of March 31

Q10 Once domestic RHI is in operation, has DECC carried out an estimate of the longevity of the scheme and the number of properties that will benefit based on the funding available?

The RHI is funded directly from government spending and has been given annual budgets, to cover both the non-domestic and the domestic scheme, for the years 2011-12 to 2014-15 (the current Spending Review period). An annual budget for 2015-16 has recently been agreed. We expect to be able to fund around 35,000 domestic installations in the first year of the scheme and for the scheme to remain open to new applications until at least 2020.

Q11 In line with the above, how many months is the scheme forecast to be available before the funding restriction and limitations come into play?

The main method of controlling the budget for the domestic RHI will be degression of the tariffs paid to new applicants as more renewable heating systems are installed. Tariffs will be reduced as spend on the domestic scheme reaches certain triggers (expressed as an amount of budget). These trigger levels are set in legislation. We will publish monthly updates of uptake so there will be transparency as to how close various technologies are to the trigger levels. This is the same method that is used for the non-domestic RHI scheme.

Q12 Finally, does DECC have any message for installers ahead of the scheme's implementation?

The launch of the domestic RHI represents a huge opportunity for installers to develop their business and to get involved. To do so they will have to be certified under the MCS or equivalent standard, so they should be looking now into getting accredited. To help with this, DECC has set up a £500,000 training fund aimed at raising the skill set of domestic heating engineers so they can install and maintain renewable heating systems. Applicants for the RHI (apart from self-builders) will require a Green Deal assessment, so installers should be looking at making partnerships with Green Deal advisors so that they are able to offer customers the full package.

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Look before you leap

Following the rise in free fully installed and maintained biomass boilers, Happy Energy's **Adrian Wright** looks at just what lies beneath the free offers and whether installers and organisations should think twice before they sign up

Biomass is an increasingly hot topic in the renewables market. Prime targets for these boilers are public sector organisations deemed to be low risk, high heat users such as local authority owned care homes.

Biomass investors are bombarding these organisations with offers of a free, fully maintained biomass boiler, usually installed in a pre-built container delivered to site and installed on a new concrete base.

A free boiler, fully maintained for 20 years, sounds great doesn't it? So should you go ahead and take up the offer or advise someone to go for it if you are asked?

Well the answer will differ depending on your circumstances, but when something is being offered for free, particularly by private equity style investors, it's often the case that there is no such thing as a free lunch.

Before you make a decision it could literally 'pay' to ask the following questions:

Will the wood pellet or wood chip fuel be cheaper than my current fuel supply?
Mains gas is usually cheaper than biomass fuel so your energy bills could actually increase. The biomass supplier may use a bit of smoke and mirrors to make it look as though the biomass is cheaper by quoting improved boiler efficiencies but biomass is unlikely to be cheaper than gas. If you currently use electric, oil or LPG to heat the property then energy bills should be lower.

Can I afford to install the boiler myself, either through cash reserves, by mortgaging the property or taking out a loan?
Investors are not offering you a free boiler out of the goodness of their hearts. They are looking for safe returns of 15 percent and higher. If you can afford to buy the boiler, do, it's a great investment.

Cash converter: Free, fully maintained biomass boilers in pre-built containers are increasingly being offered to low risk organisations as investors seek up to 15 percent returns under the RHI

What minimum use will be required on the free boiler?
Most contracts linked to a free biomass installation will require you to generate a minimum amount of heat a year. Consider very carefully before signing up to such an agreement as there is likely to be a penalty attached if you don't use the boiler or don't achieve the minimum use.

Are there other ways that I should be looking to cut my energy bills?
Typically someone providing you with a free biomass boiler will not want you to save energy. In fact, they want you to burn as much as possible. Insulation and low energy lighting are two upgrades with the quickest payback but solar electricity backed by the Feed-in-Tariff income should also be considered.

Is other grant funding available?
If the property that is having the boiler installed contains self-contained domestic units or social housing where the district heating systems is being upgraded to biomass, tens or hundreds of thousands of pounds could be available through the Energy Company Obligation (ECO).

So if you opt for a 'free' biomass boiler, what are you giving away? Let's take a 200kW wood chip boiler, the size of boiler preferred by investors due to the generous RHI level.

The full boiler installation including ground works and dedicated cabin could cost you around £150,000. If you used the boiler for around 3,000 hours a year, you would end up with RHI income of just under £30,000 in year 1.

Add a conservative indexation of 2.5 percent per annum and over 20 years you will have generated over £700,000. Even if you set aside a couple of thousand pounds annually for servicing and as a sinking cost for replacement parts, you will still be left with a profit of around £500,000.

Still want to give this away to someone else?

Peak practice

With the rollout on the domestic RHI now looming, the pressure is on for renewable heating installers to be at the top of their game. **Phil Hurley**, NIBE's managing director, runs through a step-by-step guide to best practice and fitting the company's newest offering: the F2040 air source heat pump package

Preparing for success: pre-installation

As the first port of call for homeowners looking to benefit from upcoming RHI payments, installers will play a central role in taking the tariff scheme from paper into practice.

For MCS installers, the first step for a successful domestic installation is always the initial homeowner visit and consultation. This is your chance to discuss the customer's requirements in detail, and explain the benefits of a heat pump system, as well as the ins and outs of RHI payments and product warranties.

Step 1: Heat-loss calculation

All air source heat pump installations start with a full heat-loss calculation for the property. To meet MCS guidelines, installers must use a method that complies with BS EN 12831. The results will determine the required output for heat emitters and the heat pump – this must be in accordance with MIS 3005 100 percent sizing. The NIBE F2040 air source heat pump is available in three outputs: 8kW, 12kW and 16kW.

Step 2: Siting

Positioning of the external heat pump unit is key. Always take into account minimum clearances (the distance between the F2040 and the property must be at least 150mm, with a minimum of 1m in front of the unit), noise levels and the distance to the next-door property.

Step 3: Mounting

To minimise noise disruption, the heat pump needs to be put onto a solid base or mounted on the wall using brackets. The F2040 unit itself comes complete with a stand (so it is not affected by snow/leaf build-up). Bear in mind that there should be an accessible drain or soak-away nearby for disposal of the condensate from defrost cycles.

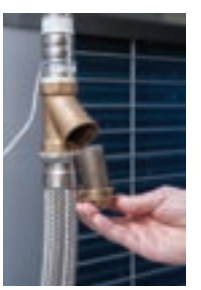
Step 4: Pipework

Connect the pipework to the heat pump, heat emitters and NIBE Titanium Megacoil hot water cylinder (or all-in-one VVM storage/control unit).

Step 5: Wiring

Fit the heat pump with a suitable isolation switch and complete all the wiring connections to the SMO 20 intelligent controller or VVM unit, indoor and outdoor sensors, three-port valve and hot water sensor.

Step 6: Flushing out



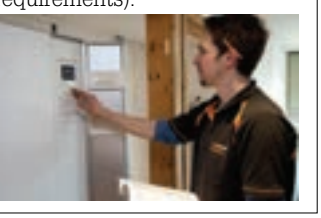
Fill the system and check for leaks before flushing it out (if installing on an existing system ensure this is thoroughly flushed beforehand). Check the particle filter for any installation residue and clean. After flushing, an inhibitor should be used for long-term corrosion protection. The filter should also be cleaned annually as part of the heat pump servicing routine.

Step 7: Pipe insulation

Insulate all exposed pipework, valves and hoses using Class O UV-stabilised insulation.

Step 8: Commissioning

Start up the heat pump and follow the commissioning instructions on the colour display of the SMO 20 or VVM control panel (adjusting settings according to homeowner requirements).



Step 9: User training

Complete the Heat Pump Benchmark Checklist before completing a full handover with the homeowner. It's crucial that installers explain how to operate the system correctly and its maintenance requirements. They should also provide the customer with copies of installer and user manuals and MCS certification for the install (required to qualify for RHI payments).

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The power of water

Chris Dale, director of Danfoss, looks at how lakes and rivers are increasingly being used as a green energy source

Property owners living near water are recognising how its latent heat can be harnessed and converted into power for their homes. Renewable energy installers are therefore upskilling in water source heat pump technology, in order to help them take advantage of this lucrative area.

Preferred choice

A water source system is usually a desired option for heat pumps. The reason for this is that water is efficient at retaining heat and in many cases, it ranges between 7 and 12°C, depending on the time of year. All property owners need is a nearby water source with a sufficient yield, plus an extraction licence from the Environment Agency, when using over 20m³ per day from a natural water source.

Our heat pump courses cover the two main methods of heat extraction for water source heat pumps. This includes open loop systems, which use ground water from an aquifer and well, and closed loop systems that combine a water and antifreeze mixture in a ground loop. In most cases, collected water passes through a heat exchanger which removes some of its heat and the chilled water is then returned back to the source through a second well.

On a recent project, the owners of a large historic former mill in Bedale, North Yorkshire undertook a major refurbishment, which included having a water source heat pump system installed that generates its energy from nearby Bedale Beck.

Danfoss approved heat pump installer AV Commercial, based in Leeds, designed a system which included two Danfoss DHP-L 12 kW ground source heat pumps fitted in an open loop method to extract water from the beck.

The system is expected to save the homeowner around 50 per cent on his energy bills and will pay back in less than five years. The two 12 kW heat pumps supply the property with space heating through under floor heating and oversized radiators in some areas of the property. The heat pump also supplies the home's hot water needs.

Easy to install

Water source heat pump systems are gaining in appeal, due to them being the most efficient type available. As river water has a relatively high temperature, this means that it optimises the running of the heat pump. Using a water source system also requires much less ground works than with a ground source system, which can make it quicker and more straightforward to install.

Water source heat pump systems are gaining in appeal, due to them being the most efficient type available

Heat pump installers that undertake manufacturer-led training on water/ground source heat pumps may find this is a specialist area where they could make major gains in terms of growing their business and becoming experts in their field.

As pressure increases on developers and architects to specify renewable heat systems for new homes and buyers seek to reduce their homes' running costs, the use of water source heat pumps looks set to continue. For anyone living near a lake or river, the reasons for making use of the natural resources near their home for energy generation, especially with the planned introduction of the Renewable Heat Incentive, have never been stronger.

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Green rewards

Salisbury District Hospital has turned to combined heat and power (CHP) to save money, reduce carbon dioxide emissions and ensure patient comfort

Salisbury NHS Foundation Trust partnered with cogeneration specialists ENER-G to supply the CHP system which now generates the majority of the hospital's heating and low temperature hot water requirements and a third of its electricity needs. In addition, the district heating scheme is feeding hot water and heating to its spinal treatment centre and day surgery unit, located in separate buildings.

The 850kWe ENER-G CHP system is reducing carbon dioxide emissions while releasing cash savings to the Trust of more than £240,000 per year.

Tony McDermott, business development manager (healthcare) for ENER-G Combined Power, said: "Salisbury NHS Foundation Trust is demonstrating leadership in reducing carbon and proving that utilising energy efficient CHP makes financial sense too. By generating low cost energy, the CHP system will pay for itself within five years. The electricity produced is also exempt from Climate Change Levy carbon taxes, which increases the return on investment.

"The district heating system provides the perfect constant warm temperature required by people recovering from spinal injuries at the specialist treatment centre. The CHP system satisfies normal heat requirements, with the back up boilers used if there is peak demand."

First aid: Salisbury NHS Foundation Trust has saved almost £0.25m in energy bills whilst significantly reducing its carbon footprint by installing an 850kWe ENER-G CHP system at Salisbury District Hospital

Lofty ambitions

TGE Group has completed the installation of over 2,300 rooftop solar panels for UK potato distributor, Branston, in a multiple site contract covering Lincolnshire, Scotland and Somerset

After surveying the three locations, TGE Group recommended the installation of four solar PV systems of varying sizes across the sites. In total, a 637kWp system, comprising 2,388 solar panels, was installed across the three sites to generate an estimated 487MWh of energy and save 263 tonnes of carbon dioxide in the first year.

Sky high: TGE Group has installed a 637kWp roof-mounted system for potato distributor Branston, comprising 2,388 solar panels at three separate sites

Monitoring systems were also installed to ensure the systems continue to operate at optimum levels and to identify any underperformance or failure quickly, so it can be instantly highlighted and acted upon.

Vee Gururajan, projects director at Branston, said: "We are committed to our strong environmental credentials and extending our use of renewables, which already includes anaerobic digestion and water recycling systems. We use all our energy as efficiently as possible and try to reduce our energy costs so it made sense to look at other ways we could produce our own energy from a natural source."

Rupert Higgin, managing director of TGE Group, added: "We needed to design systems that suited the resources and requirements of each location as well as take into consideration the operational constraints of working on active food preparation sites. Despite this, all four projects were completed on time allowing Branston to benefit from a robust and sustainable system that reinforces its environmental commitment and offers a significant, 20-year buffer to rising energy costs."

DEHN Protects PV Systems

Reliable power supply thanks to lightning and surge protection

In the future, wind, water, biomass and of course the sun will ensure that the lights do not go out in industrial plants and private households.

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Mounting systems for solar technology

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The ten commandments of biomass

With large rural buildings a key market for biomass installers, Rudie Humphrey from **Forest Fuels** offers ten tips for success in this sector

1. Plan ahead
At the outset, work out what the client wants:

- Maximum RHI income?
- More heat in a building that's currently under-heated?

Design the whole system to meet the objectives. Balance capital against operational costs – small capital savings which increase running costs or fuel price may not be worth it in the long run. Remember that 80 percent of the lifecycle cost will be the fuel.

2. Plan ahead further
Ensure your client is talking to fuel suppliers early. Know who to talk to or recommend locally, so fuel providers can plan ahead. Best prices are achieved by signing fuel contracts along with installation contracts.

3. Get the fuel store right
For wood pellets, the bigger the store the cheaper the fuel. Deliveries less than five tonnes are very expensive, aim for a store which can accommodate 10t deliveries or larger if you can. Chip is delivered in full loads, so the chip store size should relate to the load size, plus an allowance so they never run out. Work out store sizes this way, rather than saying "I want a store which can take a week's worth of fuel," for example.

4. Get appropriate fuel handling
Think about the vehicle delivering the fuel and how it's going to get into the store. There are lots of options: blown, scissor lift, chip shifter tipped, semi below ground. If in doubt, ask a fuel supplier early as design changes are easier to make on paper! Check that the lorry you are planning for can actually get to the site.

5. Fuel store size
Wood fuel isn't like water, it won't completely fill the store (there will always be lost space in the top corners, for example). There are three numbers imperative to success:

- Gross volume of the store (the amount of water you could put in)
- Net volume (the amount of wood fuel you can fit in, allowing for voids, corners
- Volume of fuel that can be delivered (excluding your allowance so they never run out)

End users should work to the last of these. Help them by being clear on the store's delivery size as it is crucial to the success of the installation.

6. Get an overview
A biomass system is not about the individual parts, it's about how they all fit together. It's critical that someone has the overview and can see how all the parts fit together – boiler, fuel store, fuel handling, thermal store, heat main etc.

7. Pellet or chip?
Each is right in some circumstances and not others. Don't be scared of chip – nowadays it's widely available, in-spec and delivered by many accredited suppliers.

Top marks: For high quality and reliable fuel, installers should always look for ENplus accreditation for wood pellets and Woodsure for woodchip

Thinking ahead: Project changes are much cheaper to make sooner rather than later, says Rudie Humphrey, Forest Fuels' operations manager

8. Go accredited
Ensure whatever you buy and from whomever you buy it they have the appropriate accreditations, this applies not only to kit but also fuel. Look for ENplus for wood pellets and Woodsure for woodchip. These Quality Assurance accreditations mean fuel production, handling and storage meet the criteria for trouble-free operation, especially important in warranty periods.

9. Value experience
Biomass fuel isn't complicated or new: Scandinavia and Austria have used wood heat for 30+ years. Look for established fuel companies with multiple depots who can give customer references.

10. Plan ahead
Did I already say that? It's critical. Plan the whole project, take the overview, get fuel expertise from your local suppliers and look at the lifecycle cost for clients.

A great fuel supplier will mean problem-free running, building your reputation and profitability.

Solar savings

A Devon dairy farm is milking healthy energy savings after having a large solar panel system fitted onto a barn roof

Reeves and Partner dairy farm in Kingsbridge had 100 solar panels fitted by Exeter renewable energy firm Solarlec.

The day-to-day running of the farm requires a huge amount of energy - the milking parlour features a large compressor used to make ice to chill milk and an industrial boiler heats water to clean the parlour - so farmer David Reeves was keen to investigate ways to stay ahead of the game and take control of escalating energy costs.

Cash cow: Devon farmer David Reeves will net more than £140,000 in energy savings and FiT income over the next 25 years from his PV array

David said: "Solarlec were fantastic and the installation ran smoothly - they even suggested a few small tweaks we could apply to make the most of the solar electric during daylight hours and it's made a huge difference."

David monitors the productivity of his system using two inverters which have been installed inside the barn.

He said: "I come in here most mornings on my way to fetch the cows in as it's becoming light - I have a look at how many units we produced the previous day. It's interesting to have an idea throughout the day of how much electricity you're turning out and what you can use at the other end.

"I chose a large system because even during the winter months when we experience fewer hours of daylight I'll still have plenty of power to keep the farm running smoothly."

The solar panel system is set to save the farm £51,826 in electricity bills over the next 25 years, with £91,224 to be fed back into the business over the same period through the Feed-in Tariff.

Top marks for Dimplex

Four **Dimplex** high temperature air source heat pumps are delivering heat and hot water to new student residences at the University of the West of Scotland's campus in Ayr

The new £7m student residence block accommodates nearly 200 of the university's 17,000 students and has achieved a 'Very Good' BREEAM rating partly due to Dimplex's LA26PS 26kW ASHPs and electric panel heaters.

Edinburgh-based Tony Centola, building services partner at engineering consultancy Cundall, designed the system.

Explaining his decision to opt for a Dimplex solution, he said: "The brief was challenging as we had to find the ideal balance to meet the client's brief for low carbon footprint targets with electric heating to provide an efficient, controllable and robust solution that fits in with the demands of a busy location.

"We looked at heat pump costs and payback but we also wanted to ensure that we could have a supply of domestic hot water up to 60° Celsius and Dimplex was the only manufacturer able to meet the spec we needed. Because of our cooler climate, we set the spec for our calculations down to minus seven degrees and according to our follow-up readings; it's all on track with our forecasts."

Tough examination: Four Dimplex high energy ASHPs were chosen at The University of the West of Scotland to meet the high heating and hot water demands of its new £7m student residence development

He added: "As well as high eco standards to meet, the University wanted a simple and straightforward heating system that not only needed to meet a demanding capital cost budget but also provide efficient running costs, longer term. The Dimplex solution allowed us to achieve all this and we added in extra control of the all-inclusive student energy costs by adding in PX controllers and press button delay timers so the heat is only provided when the units are occupied."

Time team

Soulton Hall has replaced traditional fossil fuels with two **Stiebel Eltron** ground source heat pumps, generating hot water and heating for the 30-room manor house and coach house

Having previously used oil and electricity, historic Soulton Hall in Wem, Shropshire is now saving more than £10,000 each year in fuel costs, as well as achieving a substantial reduction in CO2 emissions.

The heat pump system was designed and installed by Staffordshire-based Total NRG – an approved Stiebel Eltron installer partner.

Total NRG director Bryan Jones said: "This has been a fantastic project to work on – the hall itself is stunning and the site really lends itself well to green energy.

"As there was plenty of ground space available, we decided to go with a twin ground source heat pump system, with a Stiebel Eltron WPF27HT heat pump working alongside a Stiebel Eltron WPF35 heat pump.

"We laid 3,800m of ground loop with a pre-assembled manifold chamber which is 90m away. The system looks great and the client is very happy with the design."

Owned and managed by the Ashton family, Soulton Hall has invested heavily in green energy systems over the past two years and is firmly committed to sustainability.

More than 200 solar panels produce around 70,000kWh of free electricity for the home site each year – which in turn powers the ground source heat pump.

Tim Ashton said: "We are delighted that the heat pump system has been commissioned and is now up and running.

"We use our own green electricity to help power the heat pump, which is taking the constant 10°C temperature under one of our fields to meet all our hot water and heating demands."

Real estate: Soulton Hall's owners the Ashton family has added a powerful twin GSHP system to the 200 solar panels already installed on the site

Natural remedy

Aberhall Farm is a large chicken farm, comprising of six sheds heated with warm water underfloor heating and hot water overhead heaters

Food for thought: Biomass-powered underfloor heating and hot water overhead heaters not only reduce Aberhall Farm's carbon emissions but cuts chicken mortality by lowering ambient water levels in the sheds

Cashing in: Aberhall Farm's six 200kW biomass boilers should earn £120,000-£150,000 in total RHI payments per annum

Creating this heat are six 200kW biomass boilers, with LPG back-up. Financially, the numbers are impressive with each boiler earning between £20,000 and £25,000 in RHI payments per year.

For the chickens, biomass has been proven to be much better than LPG – the fuel previously heating Aberhall's sheds. LPG increases the levels of CO2 and CO2 in the sheds and produces a large amount of water.

Biomass creates an indirect, dry heat that has the potential to greatly improve the Feed Conversion Ratio (FCR) – basically, the birds grow more without increasing their food consumption. The space in which the birds inhabit is also more uniform, with heat distributed evenly and litter noticeably drier and more friable, meaning it is fit for purpose for longer, saving the farmer money on bedding.

All this adds up to healthier chickens; mortality is much lower, ammonia levels are reduced and there are fewer cases of common barn hen health problems, such as hock burn and footpad dermatitis.

Casting the net

Finding new customers can be tough regardless of the industry, so finding new ways to market could make any business stand out from the crowd, says **Lauren Corbishley** of localtraders.com

The UK is still suffering as a result of the financial downturn and some renewable energy businesses have felt the pinch even more so due to the lack of demand in some areas.

According to statistics from localtraders.com, demand for renewable energy installers is still one of the worst affected trades being sought by consumers, so looking at different ways to market your services could help you reach customers who may not know you exist. For example, on the internet, companies can now monitor the amount of people who have seen their advert, taken the time to find out more and ultimately call and ask for a quote. With tools such as Google Analytics, the web is becoming a productive way to spend advertising budgets as it ultimately shifts the power back to the business.

Localtraders.com could provide a different approach to advertising and could offer a unique way for installers to broaden their marketing and tap into this virtually untouched market because it cuts out conventional advertising costs, is web based and brings the customer directly to the tradesperson, without the need to advertise. It's simple and straightforward for renewable energy installers to sign up to the service, all they need to do is complete an online form and once signed up for a small fee, will become one of localtraders.com's recommended traders. Research shows that more people looking for a tradesperson turn to the Internet first; customers who are looking at hiring a tradesperson for quotes simply go online and contact localtraders.com and within five minutes their details will be passed directly to the renewable energy installer who then speaks directly with the customer.

Thinking outside the box and maximising web presence and visibility is becoming the norm and all companies should be investing online to help secure their futures.

Figure it out

Generation tariffs for non PV technologies

Technology	Band (kW)	Tariffs (p/kWh)
Hydro	≤15	21.65
	>15-≤100	20.21
	>100-≤500	15.98
	>500-≤2000	12.48
	>2000-≤5000	3.23
Wind	≤1.5	21.65
	>1.5-≤15	21.65
	>15-≤100	21.65
	>100-≤500	18.04
	>500-≤1500	9.79
	>1500-≤5000	4.15

(Source: OFGEM)

Number of MCS registered installers per technology

Technology type	Cumulative number	Registered December 13
Solar PV	3034	19
Biomass	453	04
Air source heat pump	1117	12
Ground source heat pump	915	09
Solar thermal	1285	06
Small Wind	125	0
Total	3812	33

Number of MCS registered installations per technology

Technology type	Cumulative number	Installed Dec 13
Solar PV	502310	8461
Biomass	4214	201
Air source heat pump	25515	484
Ground source heat pump	7513	99
Solar thermal	6030	73
Small Wind	4243	31
Total	549825	9349

(Figures supplied by Gemserv)

Generation tariffs for Solar PV

Tariff band	FiT rate (p/kWh) valid from 01-01-14
<4kW	14.90
>4-10kW	13.50
>10-50kW	12.57
>50-100kW	10.71
>100-150kW	10.71
>150-250kW	10.25
>250kW-5MW	6.61
Standalone	6.61
Export Tariff	4.64

Domestic RHI tariffs

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

Domestic RHI is expected to be introduced in spring 2014 and will apply to all eligible installations installed since July 2009

Green Deal

Month	Assessments	Live GD Plans (cumulative)
January	74	0
February	1729	0
March	7491	0
April	9522	0
May	12146	0
June	13517	0
July	13645	1
August	13086	12
September	13967	57
October	16674	219
November	15599	458
December	12388	626
Total	129842	-

(Source: DECC)

Cost comparison of heating fuels

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	0.59 per litre	2530 litres	£1,493
Wood pellets	4800 per tonne	94	24300	235 per tonne	5 tonnes	£1,175
Natural gas	1 per kWh	90	25300	0.05 per kWh	25300 kWh	£1,265
LPG	6.6 per litre	90	25300	0.48 per litre	3833 litres	£1,840
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	0.59 per litre	759 litres	£448
*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	0.05 per kWh	7590 kWh	£380
*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	Reviewed tariff (proposed Spring 2014)
Small biomass	Solid biomass: Municipal solid waste (inc CHP)	Less than 200 kWth	Tier 1: 8.6 Tier 2: 2.2	20	No change
Medium biomass	Solid biomass: Municipal solid waste (inc CHP)	200 kWth and above, less than 100 kWth	Tier 1: 5.0 Tier 2: 2.1	20	No change
Large biomass	Solid biomass: Municipal solid waste (inc CHP)	1000 kWth and above	1	20	2.0
Small ground source	Ground source heat pumps, water-source heat pumps, deep geothermal	Less than 100 kWth	4.8	20	Tier 1: 8.7 Tier 2: 2.6
Large ground source	Ground source heat pumps, water-source heat pumps, deep geothermal	100 kWth and above	3.5	20	Tier 1: 8.7 Tier 2: 2.6
Solar thermal	Solar thermal	Less than 200 kWth	9.2	20	10
A2W heat pumps	ASHPs	All	N/A	20	2.5

(Source: OFGEM)

RHPP Phase 2

Technology	Voucher value (£)
Solar thermal	£600
Off gas only	
Biomass	£2000
ASHP	£1300
GSHP	£2300
All vouchers must be redeemed before March 31 2014	

Applicants must also undergo a Green Deal assessment in order to qualify

What data would you like to see on this page?

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Knowledge: Case studies

HEAT PUMPS

What: Historic family home replaces oil boiler with water source heat pump

How: 2 x DHP-L 12kW GSHP with open loop system

Result: Significant reduction on £5,000 annual oil bill

A waterside property in the village of Crakehall near Bedale, North Yorkshire, has been fitted with a water source heat pump system generating energy from Bedale Beck.

Graham Senior and his family have lived in the six bedroom 18th century property for 11 years, but decided to carry out major renovation work, which included replacing their previous oil fired boiler with a heat pump from Danfoss.

AV Commercial designed a system which includes two DHP-L 12 kW ground source heat pumps fitted in an open loop method to extract water from Bedale Beck, which at the closest point is 12 feet away from the property. The system draws water into a well and then pumps it into a plant room 150 feet from the river, where it enters a 1,100 litre settling tank with reverse washable filter and two heat exchangers deliver heat from river water to the brine loop. The house itself features a Danfoss 400 litre hot water cylinder and a 200 litre buffer tank.

Mr Senior required an Abstraction Licence from the Environment Agency, which is essential for anyone using more than 20m3 from a natural water source.

Graham Senior said: "I had done lots of research on renewable energy as we were spending over £5,000 per year on oil, which was rising every year. As part of our renovations, we wanted to make our bills more affordable and to tap into a renewable energy source. Because we have a river close by, a water source heat pump was the perfect option."

Chris Dale from Danfoss Heat Pumps, said: "It made perfect sense on this project for the Senior family to take advantage of natural resources near the property. Water source heat pumps provide a high coefficient of performance, which results in exceptional energy savings and a very natural and sustainable way to provide heating and hot water for a property."

Modern world: The Senior family's 274 year old property in North Yorkshire has been brought firmly into the 21st century with an innovative water source heat pump

SOLAR PV

What: Navitron helps Knight Farm Machinery save 36 percent on electricity bills

How: 362 panel PV array

Result: Five year payback plus £88,000 energy bill saving over subsequent five years

With the cost of electricity steadily on the rise, UK farm equipment manufacturer, Knight Farm Machinery, decided to invest in a 362-panel solar PV array from Navitron to cut energy costs and save money on utility bills.

Based in Oakham, Rutland, Knight Farm Machinery manufactures specialist farming equipment – a process that uses up to 28,000 kWh per month to power the entire plant.

"We use a huge amount of electricity in our factory," said Clare Slane, commercial manager for Knight Farm Machinery.

"And with energy rates constantly rising, we decided it was finally time to invest in a more financially and environmentally sustainable way of powering our business.

Saving grace: Within three months of installing a 362 panel PV array, Knight Farm Machinery saw a 36 percent reduction in energy drawn from the National Grid

"Since the installation, we've seen a definite decrease in electricity bills. Over the first three months, we saw a 36 percent reduction in daytime energy use which saved us over £3,000 – plus we're receiving payment from the Feed-In Tariff."

Ivan Lucas, technical director of Navitron, said: "We were able to specify Knight Farm Machinery a cost-effective energy saving solution which will pay for itself in just five years and save them an additional £88,000 over the following five years.

"We have customers of all sorts come to us or our partner installers with very distinct requirements, so we treat each installation on a case-by-case basis, tailoring our specifications specifically to our clients' needs and what will work best for them.

"By working in close partnership with Knight Farm Machinery, we've ensured that they can save thousands of pounds every year, while also becoming a greener company in the process – a feat we're very proud of."

SOLAR THERMAL

What: Solar thermal supplies hot water to Snowdonia Caravan Park

How: 10 x Kingspan Solar Thermomax Heat Pipe collectors

Result: Combined bill savings and RHI income of £3,000 per annum

During recent refurbishment work at Trawsdir 5* Touring & Caravan Park in Snowdonia National Park, local renewable energy installers Arizon Energy were asked to review options for renewable energy technology.

Initial analysis by Arizon highlighted that the demand for hot water within the shower block was consuming a considerable proportion of the overall energy usage of the Park, particularly in the peak summer months.

Arizon approached Kingspan Solar to help design a system to provide a reliable source of year-round hot water for the block that could also cope with the heavy seasonal loading placed upon it during peak periods.

Kingspan Solar software was used to specify 10 Thermomax Heat Pipe solar thermal collectors covering 28,000m2, to be placed West/East on each side of the shower block – with the majority facing West with the tubes twisted towards south to capture the early afternoon – evening sun.

During the winter months, while there is less solar energy and reduced demand for domestic hot water in the Park, the solar thermal system has been designed to continue to feed warmed water into the underfloor heating as a defence against frozen and burst pipes and to continue to resist the build-up of mould.

Chris Shenton who co-owns Trawsdir Touring Caravan & Camping says the system has met and exceeded both his and the installers' expectations. The system has generated 14,994kWh of heat which equates to annual commercial RHI income in excess of £1,300. Add to that the further savings from the solar heated underfloor heating system (compared to LPG) which equates to £1882 pa. In total, therefore, the system is boosting the income generated by the Park by around £3,000 per annum.

Happy campers: Visitors to Snowdonia's Trawsdir Touring & Caravan Park now shower with hot water supplied by a 28,000m² solar thermal array

SOLAR PV

What: World's first solar canopy helps power a Sainsbury's petrol station

How: Translucent solar roof developed by Polysolar

Result: Quarter of service station's energy requirements met by solar power

Sainsbury's petrol station at its new environmentally friendly store in Leicester is partially powered by what it claims to be the world's first solar PV canopy. The unique solar panel roof harvests enough energy from the sun to generate over a quarter of the service station's energy requirements, while reducing its lighting energy usage.

The technology was developed by Cambridge-based Polysolar. Its translucent solar glass technology is designed to absorb light from both sides - and is said to work with low levels of ambient light, rather than just direct sunlight, making it ideal for flat or vertical surfaces. It is also less sensitive to shading and high temperatures, meaning it can be placed in non-optimal positions to generate more electricity over the year.

Paul Crewe, Sainsbury's head of sustainability, engineering and energy, said: "We're really pleased to be trialling this brand new technology, which coincidentally is orange in colour. It is helping to reduce our energy costs and carbon footprint, and is part of a suite of new technologies we're using at our new stores as we aim to become the UK's greenest grocer.

"We've always been very keen to try new technologies if they have potential to help us achieve our 2020 targets. And, once we have a clear understanding of the commercial and operational benefits, we will consider using this canopy at future petrol stations, or retrofitting them at existing stations."

Hamish Watson, founder of Polysolar, said: "Teaming up with Sainsbury's on the world's first transparent photovoltaic solar canopy shows how the UK not only leads the world in new technology development but also in its readiness to invest in renewable innovations. We're delighted to be working with Sainsbury's to help it achieve its stretching environmental targets."

Topping up: According to Cambridge-based Polysolar, its translucent solar roof technology installed at Sainsbury's petrol station in Leicester is the world's first PV canopy

My working week

Who: Neil Schofield, head of external and governmental affairs at Worcester, Bosch Group

What: Worcester, Bosch Group manufacturers gas, LPG and oil-fired domestic boilers plus a portfolio of renewable heating and hot water technologies.

High office: Neil Schofield (left) meets energy secretary Ed Davey through his role as head of external and governmental affairs at Worcester, Bosch

An eye on the future

My role at Worcester generally involves looking at the ways in which we, both as a manufacturer and as an industry representative, can help find the perfect balance between the here and now of gas- and oil-fired boilers, and the future generation of emerging renewable technologies. With the industry arguably one of the most dynamic in the UK, my week rarely follows a typical Monday – Friday routine, but here are a few examples of some of the interesting goings-on I enjoyed being a part of towards the end of last year.

Out and about

I was delighted to be present as energy secretary Ed Davey launched the £500,000 RHI training fund at Logic Certification, Notholt, which is aimed at raising the skill set of domestic heating engineers to enable them to install and maintain renewable heating systems. We have a strong longstanding working relationship with GTEC Training Ltd, so I was pleased to see it appointed by the Department of Energy and Climate Change (DECC) to administer the major national grant funding programme.

Official business

A large part of my role isn't just to represent Worcester in the eyes of the policymakers, but to ensure we are doing all we can to ensure installers have their voices heard. A typical week for me can involve multiple meetings with government officials, MPs and all party groups such as DECC, the Department for Business, Innovation, and Skills (BIS), and the Department for Environment, Food, and Rural Affairs (DEFRA) to name three. It would be fair to say that I have spent a great deal of time with DECC over recent months, in trying to help make the RHI and Green Deal fulfil their potential. Given the way DECC appears to have ignored our supply chain up to now though, perhaps my suggestions have fallen on deaf ears!

One direction

With Worcester being a member of a number of trade and industry bodies, most weeks will see me attend meetings and network with fellow heating industry representatives to ensure we are all pulling in the same direction to allow the heating sector to fulfil its potential. As an example, just before Christmas, I represented the Heating & Hotwater Industry Council (HHIC) at preliminary talks on the stamp duty discount for energy efficient homes, which took place at the DECC offices in Whitehall.

Closer to home

On a more local level, my week can often involve liaising closely with the Herefordshire and Worcestershire Chamber of Commerce, which was recently voted Chamber of the Year. Our role in the local community is one we take very seriously at Worcester, and it is thanks to the Chamber of Commerce that I have recently attended a breakfast briefing with the Bank of England, met with the West Mercia Police and Crime Commissioner, and represented Worcester at a number of charity events.

Checking in

From time to time, I do get to spend the odd day at my desk, which gives me chance to catch up on emails and keep myself up to speed with the latest product developments at Worcester. Needless to say, a couple of days in the office at a time are about all I can manage before cabin fever begins to set in!

I'm often asked what the diary of someone with the title 'head of external and governmental affairs' looks like, but in truth, it would be fair to say no two weeks are ever the same.

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