Renewable ENERGY INSTALLER

THE BUSINESS OF MICROGENERATION

SOLAR THERMAL SOLAR PV BIOMASS HEAT PUMPS WIND HYDRO October 2013

Inside this issue:

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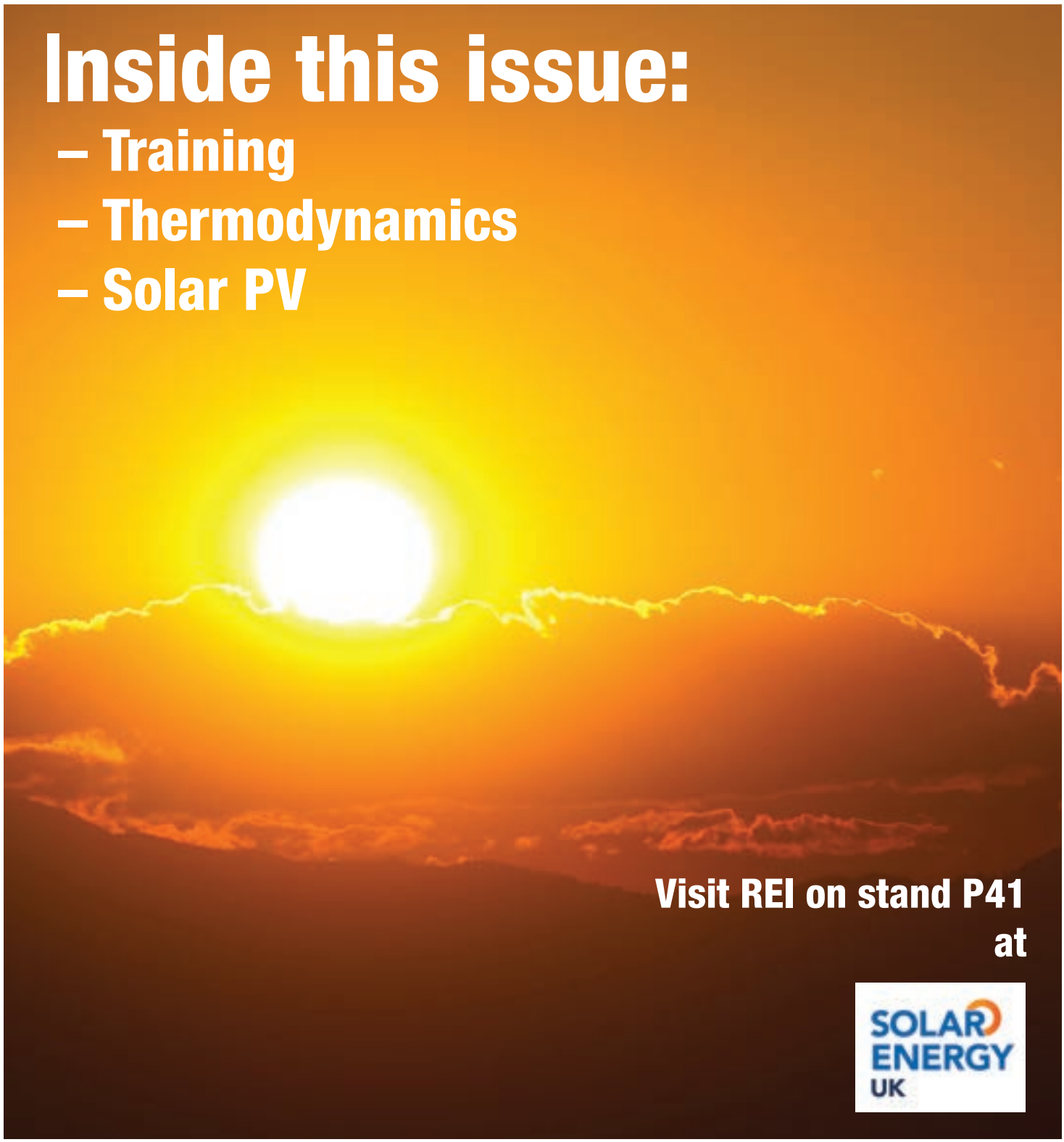

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The show must go on

If this is a quiet time for the industry then renewable energy is certainly not for the faint hearted.

No sooner had the Energy Efficiency Exhibitions completed its long journey around the UK than readers will now be turning their attention to the rich vein of trade shows occurring throughout October – beginning with Solar Energy UK at the NEC (8-10).

REI has certainly not been resting on its laurels either as I had the privilege of handing out a gong at the Energy Efficiency Awards in Coventry on September 12, having also sat on the judging panel.

It's also worth mentioning the Micropower Council's RHI and Green Deal panel debates which I was delighted to be asked to chair at several of the accompanying exhibitions.

As you might expect, elements of both policies were subjected to close scrutiny – not least the ongoing efforts being made to turn the mounting number of Green Deal assessments into completed plans. But, more pertinently, they served to ably demonstrate just how much we have to look forward to.

Invariably there is an element of back slapping at trade shows but nobody in attendance could escape the feeling that 2014 will be our year. Having gone through a period of consolidation whilst patiently waiting for Green Deal, a new Feed-in Tariff regime and the RHI all to come to fruition, we now have the tools to maximise the strong economic proposition we already offer our consumers.

To take a cricketing analogy: "Having played ourselves in, now is the time to take some shots."

Contents

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News

"Anyone applying for the RHI since September 24 2013 with a biomass boiler needs to have either an RHI emission certificate or an environmental permit" Robert Burke, Hetas p16

Events

Energy Efficiency Exhibition
Bitesize Briefings
01 October Stormont Hotel, Belfast
03 October Britannia Hotel, Aberdeen
08 October Village Hotel, Cardiff
10 October Holiday Inn, Norwich
www.energyefficiencyexhibitions.co.uk

Solar Energy UK
08-10 October NEC, Birmingham
http://uk.solarenergyevents.com

Energy Solutions
09-10 October London Olympia
www.energysolutionsexpo.co.uk

Nextgen
09-10 October Stoneleigh Park, Warwickshire
www.nextgenexpo.co.uk/free

PHEX
16-17 October Old Trafford, Manchester
www.phexshow.co.uk

NICEIC ELECSA Live North 2013
24 October Bolton Arena
www.niceic-elecsalive.com

Renewable UK Annual Conference & Exhibition
05-07 November NEC, Birmingham
http://www.renewableuk.com/en/events/

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

The Energy Saving Home Show
10-11 May 2014 London Olympia
www.energysavinghomeshow.co.uk

Old money: MCS compliant installations installed since July 15 2009 will be eligible for the domestic RHI, as long as they're registered

Time running out for RHI legacy applications

The deadline is fast approaching to register MCS compliant installations installed since July 15 2009 ahead of the launch of the domestic RHI.

Those installations already registered on the MCS Installation Database (MID) will qualify for payments but, for those not yet registered, the deadline is 4pm on 22 October 2013.

After this date, it will no longer be possible to register and obtain an MCS certification for legacy systems.

"As well as new systems, the domestic RHI is open to homes that already use renewable heat technology," explains Nancy Jonsson, product manager, heating and renewables at Daikin UK.

"These 'legacy' systems must be registered on the MCS installation database by 4pm on the 22 October 2013 to qualify for RHI payments. After this deadline, it will not be possible to obtain MCS certification for these older systems. New installations will have to be registered within 10 working days of being installed and commissioned."

DMS opens new premises

Nottinghamshire-based flow metering specialists DMS welcomed over 50 guests to the opening of its new premises in September.

Mr Anton Lienhard, ceo of Sontex in Switzerland, performed the opening ceremony by cutting a ribbon to officially open the new 5,500 sq ft facility. Mr Lienhard went on to comment that during the 12 year association with DMS he had seen the company grow into a major distributor of Sontex products, now holding a significant share of the UK market.

A tour of the new facility was given by the DMS staff showcasing the new training facility that will be made available to customers of DMS for Sontex, Elster, Danfoss and PoWogaz products.

The new two storey warehouse in Eastwood will also allow DMS to hold sufficient stock to give customers a faster turnaround of orders, and most will be delivered on a next day basis.

New horizons: DMS' new 5,500 sq ft premises in Eastwood, Nottinghamshire was officially opened by Sontex ceo, Anton Lienhard, in early September

Going for gold

Coventry's Ricoh Arena played host one of the biggest nights in the industry calendar on 12 September as 800 heavy-hitters gathered for the **Energy Efficiency & Renewables Awards** supported by NatWest.

Hosted by The Apprentice and Countdown TV star Nick Hewer, guests enjoyed comedy from Jimmy Carr at the black tie event before the focus shifted on to this year's award winners.

Winners included John Felgate of Stiebel Eltron, who won the Contribution to Energy Efficiency Award, and Eco2Solar, which came out top in the PV Installer category.

The ultimate accolade, Energy Efficient Installer of the year, sponsored by Plumb Center, went to Glevum Heating from Gloucestershire.

REI editor Paul Stephen adjudicated the awards as part of a panel which also included Plumb Center's Tim Pollard, Roger Webb (HHIC), Kelly Butler (BEAMA), John Holden (BRE Global), Peter Thom (Greenheat) and David Frise (B&ES).

The Energy Efficiency & Renewables Awards 2014 will open for nominations on February 1st. For further information on next year's awards email **team@energiseevents.co.uk**

The winners in full are as follows:

Contribution to Energy Efficiency
Sponsored by PTS (Plumbing Trade Supplies)
John Felgate, Stiebel Eltron

Commercial Project
Sponsored by Rexel
Mayville Community Centre, Bere Architects & Viessmann

Residential New Build Project
Sponsored by Professional Renewables Installer
Roussillon Park, Ecofirst Consult & ZeroC Holdings

Residential Retrofit Project
Sponsored by CORGI Vat Saver
Buxton Close, Glevum Renewables, Aster Energy & Dimplex Renewables

Energy Efficient Client
Sponsored by Renewable Energy Installer
Dumfries & Galloway Housing Partnership

Energy Efficient Initiative
Sponsored by CTC
Banham Zoo Case Study, Finn Geotherm

Training Initiative
Sponsored by NAPIT
GDER Training & Installer Network, QMSA & EU Skills

Rising Star
Sponsored by Easy MCS, Easy Green Deal
Jason Hodds, JRT Plumbing & Heating Solutions

Green Innovation
Sponsored by Adey
Yonos-Picos, Wilo UK

Centre stage: REI editor Paul Stephen presents Dumfries & Galloway Housing Partnership with the Energy Efficient Client Award

High Efficiency Boiler Installer
Sponsored by Anton
Hatfields Plumbing, Heating & Gas Engineers

Energy Efficient Insulation Installer
Sponsored by Knauf Insulation
SERS Energy Solutions

Low-Energy Lighting Installer
Sponsored by Zumtobel
Lutterworth Eco Lighting

Water Efficient Installer
Sponsored by Cistermiser & Salamander Pumps
Natural Power UK

Biomass Installer
Sponsored by Windhager
Duncan Renewables

Solar PV Installer
Sponsored by Krannich
Eco2Solar

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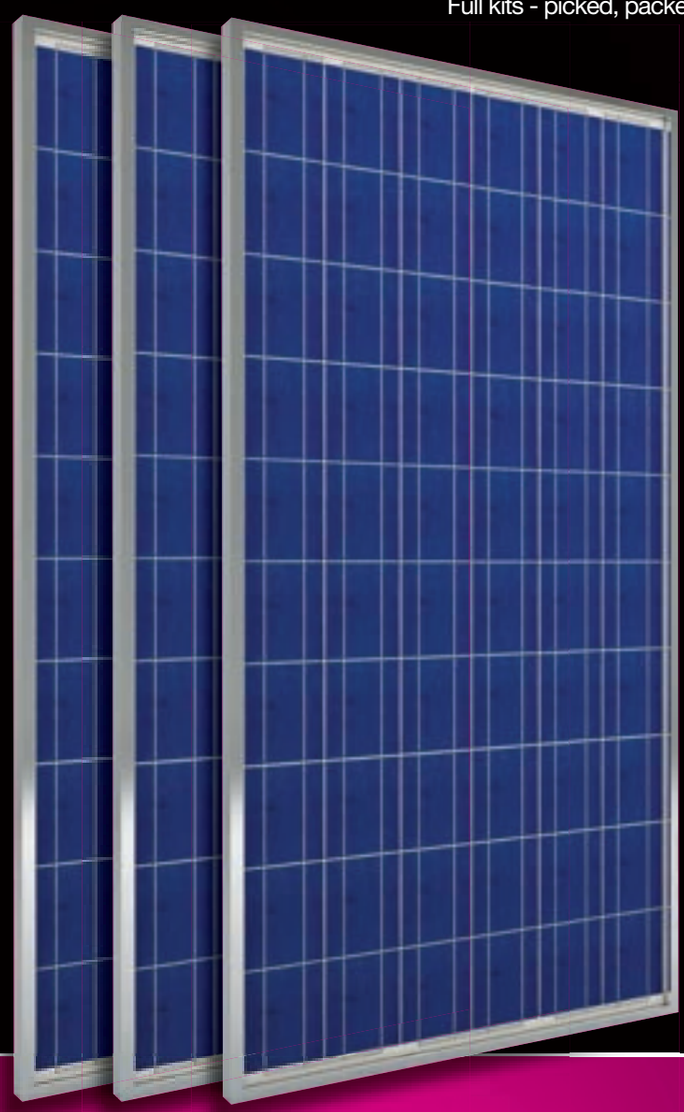

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Solar Energy UK 2013

- the UK's largest dedicated solar exhibition

Solar Energy UK is preparing for an even bigger 2013 as the show branches out yet again. Now in its fourth year, Solar Energy UK aims to bring together the entire UK solar industry with a view to driving the sector forward as well as ensuring its sustainability for the future.

The 2012 event at the NEC Birmingham included 181 exhibitors, two live features areas, a Green Deal Eco-house, three seminar halls and over 4,700 visitors. This year's event has seen Solar Power UK re-branded to Solar Energy UK to recognise the diversity of companies that were present at the 2012 exhibition – and promises to be much bigger.

In the UK, solar PV has dominated the Feed-in Tariff scheme, accounting for more than 95 percent of all installations. The development of large-scale solar farms has seen an additional 0.5GW of renewable capacity added to the National Grid too. Backed by a government-led solar strategy that's aiming for 20GW by 2020, solar is stepping into the mainstream.

As solar power has become more prevalent in the UK there is an increasing demand for convergent devices that use solar PV or solar thermal to not only generate energy, but also include inverters, energy monitoring and even storage in one simple plug-and-play box. The sector is realising that as more renewables are connected to the grid, issues of energy use and grid capacity become increasingly important. Solar Energy UK 2013 reflects the broader nature of the industry, including features on:

- Renewable heat – solar thermal, air and ground source heat pumps, district heating, CHP
- Energy storage – batteries and fuel cells for low, medium and high voltage applications
- Smart grids and transmission – smart meters, voltage optimisation, energy monitoring, energy controls, transmission infrastructure
- Microgeneration – solar PV, micro wind and hydro, AD, waste to energy
- EV infrastructure – charging points, cars, cabling

Why attend?
Despite an increased focus on whole house energy solutions, Solar Energy UK is still committed to remaining the UK's solar event covering all things solar – both PV and thermal.

Become a savvy installer
Over 30 free talks including selling solar and gaining the competitive edge with expert advice on selling domestic solar as well as up-skilling and integrating new technologies from heat pumps to biomass.

Increasing demand for solar thermal
The new Renewable Heat Incentive (RHI) is set to double the on-site heating market over the next 12 months.

Brand new: Solar Energy UK will cover solar thermal, storage and energy solutions for the first time this year in addition to PV

Latest products – over 70 product launches
The Green Deal is helping create a new savvy buyer of onsite generation and energy efficiency products for their homes and business. Meet their demand by keeping pace with the latest product developments on the show floor.

Everything under one roof
Solar Energy UK brings you face-to-face with suppliers, experts and potential customers to help you grow your installation business for the future.

Learn from the best
In addition, Solar Energy UK will continue its tradition of delivering world-class sector seminars. The Solar Energy UK seminars will cover everything you need to know about PV, solar thermal, storage and energy solutions and the wider UK (and global) solar industry. Providing the latest information on EPC requirements, the revival of large-scale, policy, technology and market trends these half-day sessions are not to be missed.

Solar Energy UK 2013 runs from 8-10 October at the NEC in Birmingham. Those wishing to attend can register for FREE entry at http://uk.solarenergyevents.com/register2013

Visit REI on Stand 41

Shining bright with Glow-worm

Pippa Wibberley, commercial director of Glow-worm, tells REI how the company's new 'Renewability' initiative will help support installers wanting to move into renewable technologies get the most from this emerging market

The government has sent out a clear signal that it is still committed to its carbon reduction targets through the extension to the RHPP, which is providing households with money-off vouchers on renewable products. Yet most homeowners remain apprehensive about switching to renewables due to a lack of awareness about the installation process and longer term benefits, and it is the job of the installer to help to put their mind at ease.

Yet before this can happen, installers need to be provided with more support themselves and easy access to training so that they can hone their skills and feel confident educating their customer. The skills and knowledge both the industry and the installer have developed should be commended, yet the industry needs to work together to encourage increased investment in renewable technologies and help installers to exploit the opportunities that are available to them.

Renewability is all about equipping installers with the knowledge and support they need to be able to specify renewables with confidence

Business development

As a manufacturer of renewable technologies, we believe that this responsibility lies with us, which is why we have launched 'Renewability'; an initiative geared solely around supporting installers to break into renewable technologies. Renewability is all about equipping installers with the knowledge and support they need to be able to specify renewables with confidence. Installers who sign up are provided with access to discounted and free renewables training, a range of business development tools and a complete back-up service from design to installation – a service which we believe is unrivalled by any other renewables manufacturer within the UK.

Discounted training

We have partnered with Easy MCS to offer installers significantly reduced cost MCS training, as well as free product training across Glow-worm's renewable product range, from solar thermal to the new range of Clearly Heat Pumps and Hybrid systems. All training takes place at one of our state of the art Centres of Excellence across the UK.

The first events took place at Belper at the end of July, with a further five events taking place at Elland, Glasgow, Bristol, Cambridge and Maidstone throughout August. More than 120 installers and merchants attended the events and we are now planning the next series which will take place across the UK towards the end of this year.

Technical support

As well as training, we have also heavily invested in technical backup with our dedicated Renewable Technologies Division. From our experience of working together with installers, we know that they want reassurance when commissioning onsite, which is why we have invested in this area so heavily. The Renewable Technologies Division has been specifically set up to respond to all renewables-related queries with a dedicated team of ten specialist MCS accredited engineers, who have added F Gas, BPEC Thermal Solar, BPEC Heat Pumps, BPEC Energy Efficiency, WRAS and G3 qualifications to their existing array of credentials. The division also has a fleet of fully equipped vehicles for immediate on-site problem solving and is backed by a fully trained call centre to assist with installations.

We are confident that demand for the initiative will continue to grow over the next year and we encourage installers to really take advantage of all that we can offer to help them to tap into this emerging market and develop their business. By working together, we hope that we can make a real different to reducing the UK's energy demand and creating a more sustainable future for everyone.

Glowing reception: Glow-worm reports that over 120 installers and merchants attended the first Renewability scheme events in August at its Centres of Excellence across the UK

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On the Wembley way with Green Deal

With Green Deal being placed under heavy scrutiny only nine months on from kick off, **Tarquin Henderson**, ReEnergise Group, says extra time is needed to see the scheme gain sufficient traction

The start of each new football season always makes the tables look a little odd. Two or three games in and you might have last season's stragglers heading the Premiership through a couple of lucky drawers and a flooky win whilst the likes of Manchester City or Arsenal could be languishing at the bottom for the exact opposite reasons. However, after a couple of months things generally sort themselves out and the normal order is restored.

The Green Deal naysayers have played their hand far too early

What you don't hear in August is a cry from the media that Chelsea are doomed and heading for the Championship because they drew against Swansea and lost to Spurs in the first two games. Everyone recognises that the season is a long one and that there will be many twists and turns before the cups are handed out.

I have been reflecting on this in relation to the Green Deal. I pity the team responsible for Green Deal PR. Even before it was announced you sensed the knives were out. But our view is that the naysayers have played their hand far too early and that Green Deal needs a full season, perhaps more, to settle down and begin to deliver.

The Green Deal needs time to work. If nothing else, the spectre of debt casts a long shadow over anything that uses borrowing as it principle driver. It also needs to be part of the drive toward significant behavioural change, but it certainly is not the only driver of this change.

The real problem as we see it is that there is a confusing mix of legislation and incentives seemingly all trying to encourage better energy efficiency but in ways actually working against each other. The Green Deal has its place as a programme to drive increased levels of thermal efficiency in the UK's building stock but to consider it in the same camp as incentives such as the FiT and the RHI is both confusing and inappropriate.

The season is a long one and there will be many twists and turns before the cups are handed out

Here's how we see it. Both the FiT and RHI are subsidy schemes designed to provide a cash incentive to those installing systems that will generate heat or power from a renewable source. This is creating energy. Nothing wrong in that at all, as long as you are replacing an existing fossil fuel demand with 'clean' energy. However, by definition, these are not schemes set up to encourage better energy efficiency. This is using less. You can still in theory quite happily fire up your biomass boiler to heat a leaky old Victorian house, watch the pigeons warm their toes, and still receive your subsidy.

The confusion arises when you begin to try to factor in the Green Deal as a way of funding an investment in a generating technology. Some of the key technologies don't actually generate very much, or at least not in a sensible timeframe. Awareness of energy is critical, and if that costs some money upfront to start the ball rolling, so be it. But we need awareness of using less as much as being a clever generator.

The Green Deal is for energy saving; the RHI and FIT are for generating energy. They live very happily side by side, working together. But your striker and your goalie rarely job share and you certainly don't address a short term performance issue with your goalie by buying more strikers!

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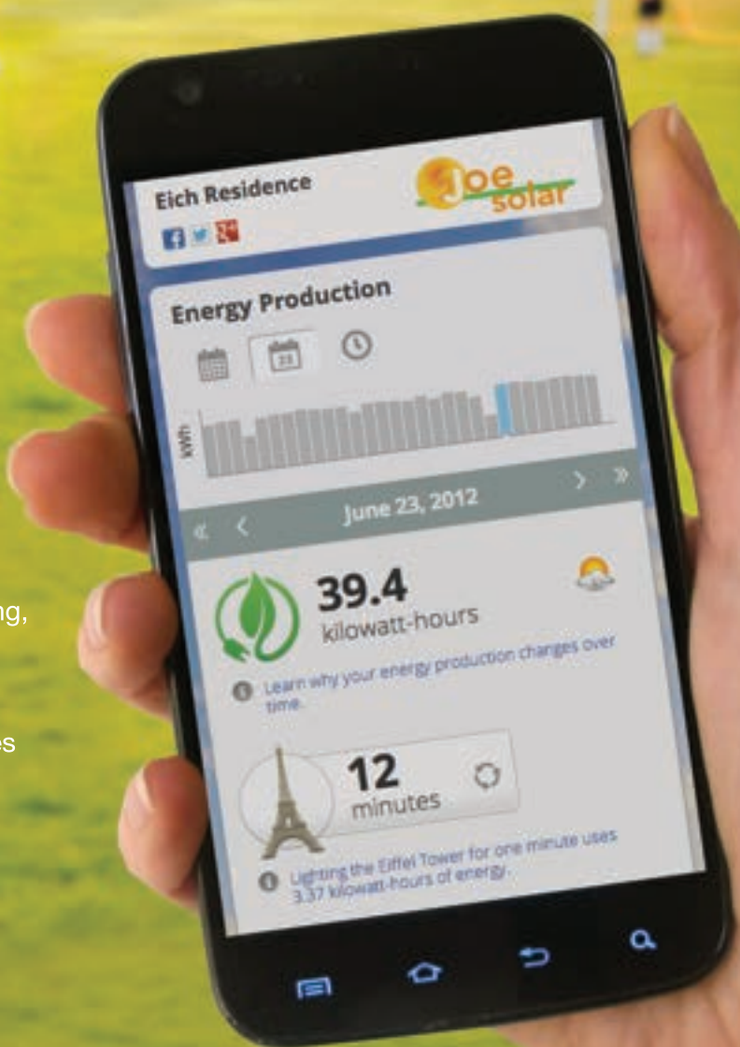

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enphase ENERGY

Partner organisation MCS presents its regular column for REI

Setting the standard

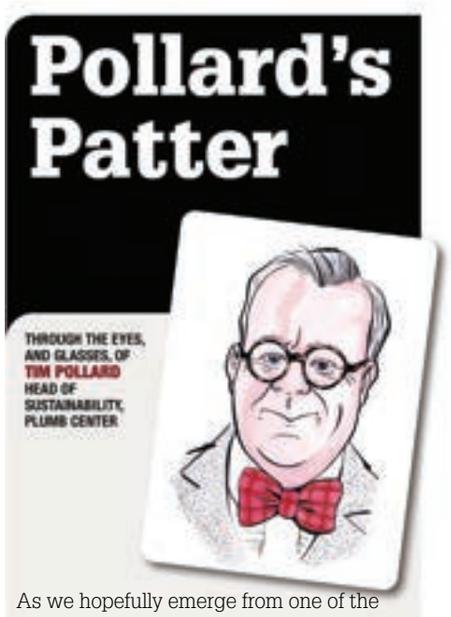
In the run up to the domestic RHI, MCS and its industry-led heat technology working groups are all working closely with the Department of Energy and Climate Change (DECC) to ensure the MCS standards remain fit for purpose. The MCS standards are being updated across a number of areas, with one of the key aims being to provide further clarity for installation companies in meeting these standards, in order to ensure they continue to provide quality installations for their consumers.

As a result of the changes and updates being proposed, MCS will be conducting a public consultation on the updates to the standards in early October 2013 for a period of one month. These comments will then be collated and reviewed, with the updates being finalised within the MCS Working Groups and through the MCS Governance Process. The MCS Licensee will then publish the newly updated standards in December 2013.

Many of the updates being made at the moment centre around the calculations for estimates of performance, in addition to the information installation companies will need to supply to the customer in order for them to be able to easily apply for the domestic RHI. MCS is also looking more widely at developing tools to support installation companies in the rollout of the new standards. It is expected that installation companies will be given up to three months before the standards become mandatory in March 2013.

On another note, the MCS' Gideon Richards has become the latest addition to REI's editorial panel.

Gideon has a diploma in management studies and an HND in electrical and electronic engineering. He sits on a number of European Standards and the International Committee for Solid BioFuels, Solid Recovered Fules and Sustainability of Bioenergy. He also chairs the British Standards Institution's PTI/17 mirror committee for TC335 and TC343, and PTI/20 'Sustainability for Bioenergy'. Gideon is the Interim-CEO of MCS and Chair of the Steering Group. He runs a consultancy called Consulting with Purpose Ltd, and is a director of DC21. He is a trustee of the charity CREATE.



As we hopefully emerge from one of the worst recessions in living memory, we can reflect on the circumstances we find ourselves in. As my dear old mum used to tell me, 'Both good and bad experiences are valuable, if we learn from both of them'.

One thing is for sure, it's a lot easier looking back and we can all be wise with 20/20 hindsight. I was asked the other day what I thought was the greatest barrier to increasing demand. Of course there are many factors which I could have picked. The restrictions on borrowing have undoubtedly had a serious effect on all markets. The housing market ground to halt, people could not get mortgages, house builders went into hibernation and businesses put investment on full stop.

The issue I chose is invisible, untouchable, immeasurable (despite constant attempts to do so) and yet it affects us all, every day and in every way. In a word, it's CONFIDENCE.

What is it that increases or decreases confidence? It can be a combination of things. People can inspire confidence, information can do the trick, and even the weather has been cited as an agent inspiring confidence.

Whatever the cause, confidence has the power to inspire change and it can rise and fall with breathtaking speed. I can feel increasing confidence with every day and that has to be what we in the trade call, 'a good thing.'

Over to you!

"Innovation is taking precedence over pure volume, and the consumer – and the planet – can only benefit" Alison Finch, So Gecko P22

Get ready for RHI with NAPIT Training

NAPIT is well placed to help installers take advantage of the extra business opportunities which will come via the domestic RHI, says the company's technical training manager **Trevor Milner**

This is the perfect time for installers to take advantage of the domestic RHI by gaining all of the necessary qualifications. NAPIT Training has a great selection of renewable energy technology courses available at its fully sustainable Bristol Training Centre and provides industry approved training that is certificated by City & Guilds, Blue Flame (UKAS Accredited) and BPEC.

The Bristol Training Centre features fully functioning solar PV/thermal, combined heat and power pump and biomass installations which demonstrate the wide range of renewable energy technologies available to view by customers of registered installers, who can arrange use of the centre as their very own demonstration showroom. It also hosts a full range of equipment including practical assessment boards, purpose-built training rigs and an extensive array of course literature, all readily available to facilitate the training of delegates undertaking any of the courses currently available throughout the electric, plumbing, heating, ventilation, renewables and energy efficiency sectors.

With courses that cover all of the technologies included in RHI, you can gain all of the tools required to make the most of this new business opportunity with NAPIT Training.

CURRENT AFFAIRS

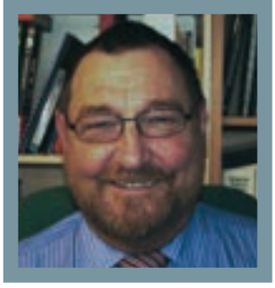
By guest columnist **Bill Wright**, head of energy solutions, Electrical Contractors' Association

DECC's initial guide to the Domestic RHI will give a big boost to the renewables industry when it comes into being next spring. Heat pumps are increasingly 'black box 'installations which require electrical work to install, which requires competent electricians. They require a substantial power supply, so checks should be made that there is sufficient supply capacity installed to accommodate the additional power, and a significant amount of control wiring. If there is already a plumbed in suitable heating system then the water connections can be relatively simple, but should be carried out by a competent person. Remember the water temperature output from most heat pumps is lower than that of a gas boiler and the heating system, radiators or better still under floor heating, should take account of this. An additional heating source will be required to boost the hot water supplied up to the required temperature, around 60C in the hot water tank.

If the heat pump is the only source then a 'deemed' calculation is used for RHI payments. The 'deemed' value is calculated using the efficiency, or 'Seasonal Performance Factor' of the pump and the calculated energy use of the house from its EPC rating after the installation

There may be a metering installation required if another heat source is connected to the system or DECC request one to be fitted for monitoring purposes. DECC are also offering a bonus payment to those households installing meters voluntarily for the first 2500 applicants in the first year.

TECH TALKING



Bivalent energy: How much, when and where

Heat pump trouble shooter **Bob Long** outlines the importance of accurate control in bivalent systems to avoid expensive bills

When speaking of heat pumps, bivalent energy refers to the supply of additional energy to supplement the output of the heat pump, as energy demand dictates.

Heat pump manufacturers often embed an electrical heater element in the water-output manifold of the heat pump, which adds bivalent energy to the water stream leaving the heat pump.

Bivalent energy sources are generally expensive to operate, particularly when compared to the p/kW output of a good quality heat pump.

Bivalent energy can be derived from a choice of dependable sources, but the source must be accurately controlled, able to quickly deploy energy, and cease immediately when not required.

Often, bivalent energy from embedded heaters is controlled by a climatic compensation thermostat and can be quite a crude method of control.

Climatic compensation control is a pre-requisite of the MCS installation criteria regarding air source heat pumps, and is designed to prohibit the use of bivalent energy until the outdoor climatic condition reaches a pre-determined low of approximately -2°C.

Air source heat pumps experience significant reductions in energy output when outdoor temperatures fall and this drop usually means the system will need bivalent support.

Over supply of bivalent energy will produce higher running costs and can negatively impact the overall economic operation of the heat pump itself.

A simple example would be that of a 3kW embedded electrical water heater, adding energy to a heating system that requires perhaps only 1kW of support. In this instance, 2kW of expensive bivalent energy would be wasted.

The most effective delivery point for bivalent support is directly into the emitter circuit, after the thermal store, and as close to the intended point of use as possible, eliminating costly thermal losses between the heat pump and the heat emitter.

Accurate control of bivalent energy is paramount to the heating system's overall economic performance and a bivalent energy source should be capable of constant modulation according to ever-changing energy demand.

The energy demand of a heating system is not only affected by changing climatic conditions. The energy requirement is also influenced by indoor events for example occupancy levels or use of energy emitting devices such as cookers/stoves, tumble driers, hair driers, lighting, etc. which all have a positive effect on the heat load.

Alternatively, ventilation, domestic hot water use, or simply the number of times exterior doors are opened and closed, will have a negative effect on the heat load.

With so many unquantifiable factors influencing the energy requirement, accurately controlled bivalent support is an essential feature of any heat pump system.

A bivalent energy source needs to have the ability to respond to all variations in energy demand, and in doing so, should provide the **exact** amount of support required, **and no more.**

Too little, and the system will not reach the desired temperature, too much, and valuable energy will be wasted.

Irrespective of the energy source chosen, the cost per kW/hr of supplementary energy supplied will be more expensive than energy supplied by the heat pump, making accurate control of the bivalent energy a paramount consideration.

Proportional, modulating control of the bivalent energy source can be accomplished quite accurately and will be discussed in next month's column.

Over-supply of bivalent energy can negatively impact the overall economic operation of the heat pump

Accurately controlled bivalent support is an essential feature of any heat pump system

Cash in your chips

Robert Burke, HETAS, reminds installers of the new emissions standards which came into force for biomass boilers last month, and are mandatory to qualify for non domestic RHI payments

Since the non domestic Renewable Heat Incentive (RHI) was launched, the majority of funding has been allocated to biomass installations. Commercial users are seeing the benefits of using biomass as a low carbon fuel, incentivised by RHI payments for users. However, anyone applying for the RHI since September 24 2013 with a biomass boiler needs to have either an RHI emission certificate or an environmental permit. This is to meet new air quality requirements, and to make sure that biomass boilers have minimal particulate and nitrous oxide (NO_x) emissions.

The criteria for the RHI emission certificate is a maximum of 30 grams per gigajoule (g/GJ) net heat input for particulate matter, and 150 g/GJ for NO_x (expressed as NO_2). If the biomass boiler does not have an RHI emission certificate then you can apply for an environmental permit from the Environment Agency. Biomass boilers that do not have an RHI emission certificate or an environmental permit will be ineligible for the non domestic RHI.

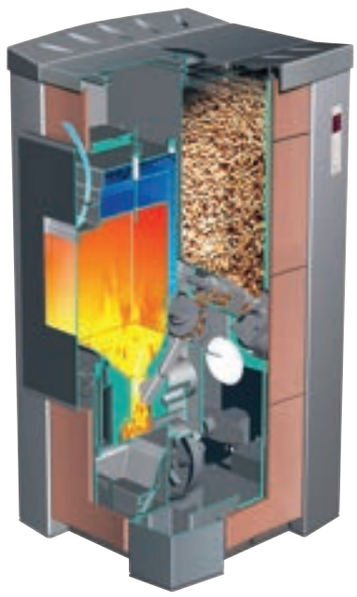
The new air quality requirements apply to any non domestic RHI applications made after 24 September 2013, which is the date the new regulations took effect. Applications before that date don't need to meet the air quality requirements, however if you apply for additional boiler capacity now then that additional capacity will need to meet the new standards.

Manufacturers who are having biomass boilers tested for emissions since September 24 2013 need the testing carried out by a test laboratory which is accredited to ISO 17025. If a boiler has been tested and certificated before that date then it's not mandatory for the test house to be accredited to that standard. Boilers are tested using the type testing range approach, which means that not every individual boiler in a range has to be tested. By testing the smallest and largest output boilers, and possibly a mid size boiler, the whole range can be certificated for a RHI emission certificate.

End users must make sure they use the correct fuel, which will be specified in the emission certificate. The manufacturer's handbook will also detail how to operate the boiler correctly to minimise emissions. Fuel quality is paramount, and moisture content has the biggest effect on heat output as any water in the fuel has to evaporate away before the wood or biomass will burn, using up energy and reducing the amount of useful heat as opposed to steam up the chimney. Fuel with high moisture content will produce lots of smoke and tars. These tars can be corrosive, potentially damaging the lining of the flue and increasing the danger of a chimney fire.

For users burning pellets there is a Europe wide standard to ensure fuel quality – ENplus. HETAS is approved as the UK certification body for ENplus by the European Pellet Council (EPC), and is able to certificate both producers and traders under the ENplus scheme. ENplus certification sets out minimum standards for ash content, ash melting temperature, wood pellet size, dust, moisture content and heat output. Pellets with low ash content will burn more efficiently, whereas high ash levels could point to impurities in the pellets such as bark. A low ash melting temperature below 1200°C could lead to clinker, potentially damaging the appliance.

A full list of approved fuel suppliers is available on the HETAS website at **www.hetas.co.uk.**



New criteria: Anyone applying for the RHI since September 24 2013 with a biomass boiler needs to have either an RHI emission certificate or an environmental permit

Heat pump champs and chumps

Steve Pester, BRE, turns his attention to the findings of the latest heat pump trials conducted by the Energy Saving Trust (EST)

At BRE we have been working with DECC and EST to install hundreds of monitoring kits on domestic heat pump systems as part of the RHPP trials. The monitoring is part of a drive by DECC to understand the factors affecting the seasonal performance of actual installed heat pump systems in the real world. This work has given some of us the chance to see a lot of heat pump installations in quick succession and in many different geographic locations, so I thought it might be useful to say a few words on the installation quality we are seeing.

What is clear is that there are many excellent heat pump installations out there where installers have taken pride in their work; system layouts are clear and neat and my money would be on these systems to be working as specified.

However, it is also clear that this situation is not universal – here are some of the typical bloopers we have noticed:

- Circulation pumps running constantly
- No drain provision for condensate - this can cause injury when a sheet of ice forms around the heat pump in winter
- Filling loops left connected. This is sometimes associated with slow pressure loss - fix the leak!
- Messy or unsupported wiring
- Hot water cylinder sensors loose in pockets or not secured properly
- Controls not set up properly (e.g. disinfection cycle not set up)
- No simple written explanation for the householder on how to use the system - many are confused by the longer response times of heat pumps, what to do when they go away on holiday, etc.

Of course, subcontractors are often used for plumbing and wiring jobs and perhaps this is a contributing factor. However, the responsibility for installation quality remains with the certified installer – this is a fundamental part of the MCS scheme.

Q&A

SIMON HOLDEN

Euroheat

REI: What have you got planned for the rest of the year?
To keep up with our ever expanding work load. The commercial RHI has been very good for business. As the winter kicks in and understanding about the domestic version of this scheme increases, we expect enquiries to go up in this area too.

REI: What do you see as the growth area in renewables?
Biomass we hope! Our main customer base at the moment is rural businesses, farmers and large home owners. The domestic RHI's returns on biomass make it a very attractive and affordable proposition for a wider group of people; homes that may not have considered renewable technologies in the past. Savvy customers will also see its investment potential – if you've got £30,000 to spend better to put it into biomass and the RHI than the bank.

REI: How is your company cutting its carbon footprint?
We practice what we preach at Euroheat and heat all our offices, factory and training centre with our own biomass boilers. We're currently coming to the end of completing the whole system, which consists of an HDG 150kW Compact chip boiler and an HDG 45kW Compact pellet boiler, linked to the buildings through district mains. We chose two boilers to ensure optimum efficiency, switching the larger one off in the summer when central heating isn't needed.

Simon Holden is Euroheat's chairman

Talking point

Liz MacFarlane, Zenex Solar, demonstrates how long term planning will see off short term challenges

I think it's fair to say that some of the people I share my office with have had a big problem with wind over the last few years. I'd go as far as to say that it's given some of them sleepless nights. I don't think they'd mind me telling you that.

Snigger you may, but we share our premises (and chairman) with Evoco Wind Energy.

The matter of wind energy is far from simple, and when Evoco's flagship 10kW turbine had a failure in 2011 it created a media storm. After being the first turbine in its class to pass MCS accreditation, the team were confident they were bringing a reliable product to market. It was only with a fleet of 200 installations, three years later that an over-speed issue came to light.

Champions league: Liz MacFarlane praises the way Evoco swiftly overcame early operating problems with its flagship turbine model

While other small-scale wind companies closed their doors due to similar problems, Evoco committed to resolve the issue and invested personal funds and all profits into R&D. Manufacturing was moved to the UK, a new technical team employed and a simple yet effective fix was found. All existing turbines were upgraded at no cost to the customer and now each one is fitted with automatic monitoring and control systems.

It's a reminder of how new our industry is. The dips and dives, the volatility and the gale force changes will settle with time and it's those who stand determined and steadfast who will remain in the long term.

I'm always interested and now very proud to hear the Evoco guys in the office talk about customer feedback. To hear of a farmer opening champagne because his turbine out-performs that of his neighbour makes me smile. I'd also like to meet him. Whoever heard of a champagne-drinking farmer?

Two minutes with . . .

Who are you?
David Hall, national sales manager of Grant UK

What do you do?
I run a sales team of 10 covering the full range of products we sell from Shetland to the Channel Islands.

Where are you?
Devizes, Wiltshire

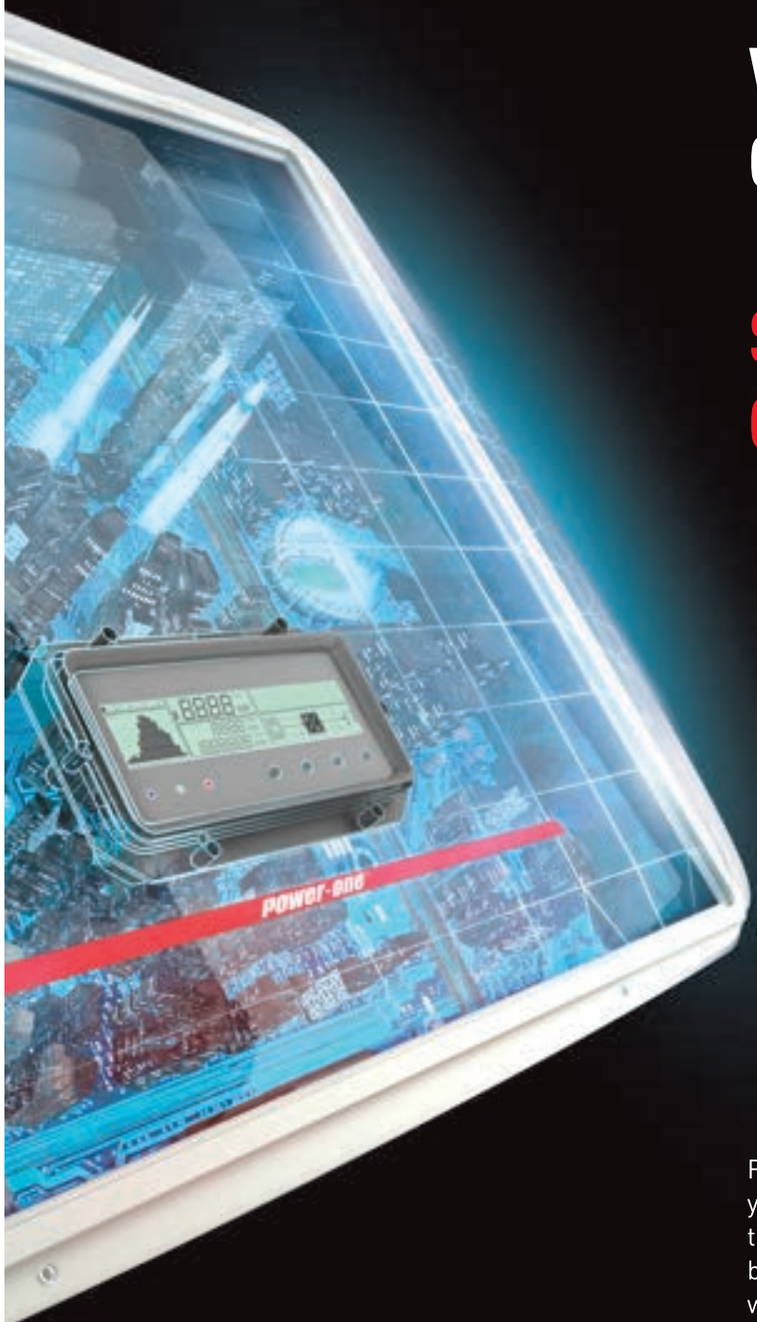
How's business at the moment?
Extremely buoyant. We are encouraged and delighted by the increase in payments under RHPP for a number of the technologies we're heavily involved in. We're looking forward to the domestic RHI arriving but for now the RHPP increases will help.

How could it be better?
These are challenging times without a doubt, and we could all do with the economic upturn that's been promised arriving sooner rather than later. One thing the government should really do, with regards to RHI and Green Deal, is increase public awareness as this would help stimulate the market. Having said that, we have diversified our product range significantly and are seeing very encouraging sales across the board.

Who do you admire in renewables?
That's not an easy choice in such a diverse marketplace, but I would say Griff Thomas from G-Tech Training has been a great asset to how we have approached the renewables market.

What's the best business advice you have received?
Many years ago my boss at the time always said "Drill as many holes as you can and one day you will strike oil". This has always stayed with me and proved to be very true.

How are you going green?
Energy efficiency and being 'green' is ingrained in the psyche here at Grant UK (ISO14001 accredited). We invest heavily in our award winning Training Academy and share this ethos with everyone we encounter.



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Thinking big

In the last week of June, an important landmark was set: for the first time, there was as much solar installed in the 10-50kW segment as in the sub-4kW residential category. So how can installers get involved in larger-scale projects, asks **Robert Goss**, md Conergy UK?

We've had the residential boom, and are currently experiencing a rapid increase in solar farm deployment. For some time, people have been wondering when the market for office buildings, factories, hospitals and council buildings would take off. To a specialist, the rationale looks straightforward – we have accurate data for power generation from different modules, experience of the capacity of different roof types to deliver yield, and a Feed-in Tariff that helps deliver 10 percent returns. If there has been a rebalancing away from residential in the last year, with sub-4kW installations down 47 percent in the second quarter, the commercial market has been more resilient, down only 22 percent from 2012.

This is still not a growth market at the national level and there are a number of reasons for this. Decision-making in a corporate organisation is shared and takes longer than in residential or solar farms. Investment decisions have been repeatedly delayed by policy changes, squeezed by tight post-financial crisis lending and government cuts, meaning that spending on facilities is lower on the agenda.

There are signs of change however. First, the economy appears to be moving out of recession. Second, there are hundreds of millions of pounds available for larger solar projects from new publicly listed investment funds, and more-established pension funds. Third, we know from DECC's local statistics that there is huge variability in larger scale penetration across the country. In only 32 out of 379 local authorities nationwide are there more than 50 large-scale rooftop installations. This points to a large bank of untapped opportunity as deeper local penetration generates copycat sales.

Sizing up: According to Conergy UK md Robert Goss, PV installers can break into the expanding commercial market by following three simple steps

Find the right customer

How then to go about approaching this challenging market? Firstly, you have to approach the right kinds of businesses and organisations. Heavy daytime energy users, larger consumer-facing businesses, businesses involved in new construction projects and public sector organisations are among the most likely. In most cases, they will have already met with multiple installers and debated whether to invest in solar for some time. But there will always be a case study of a competitor or a like-minded organisation elsewhere in the country, from which you can demonstrate that a project is appropriate and viable.

Beat the competition

Secondly, do not underestimate the competition. Property managers and owners have been assailed by a huge amount of literature on the Green Deal and energy efficiency services, and there is still a perception that the returns in solar have vanished. Communicating clearly that the Feed-in Tariff has fallen in parallel to the costs of kit and installation, and highlighting the relative simplicity of solar (and its financing) should provide an 'in' that they can understand.

There is still a perception that the returns in solar have vanished

Perfect your timing

Thirdly, think about the timing of your sales calls. There have been sizeable peaks in completions mid-summer, pointing to the way budgets are allocated in advance for often substantial outlays, as well as the challenges of large-scale build in winter. Making sure the client is aware of the financial benefits of committing in advance of the next Feed-in Tariff regression is of paramount importance. Right now that means well ahead of the expected 3.5 percent cut in tariffs across all segments in January, and approaching organisations more comfortable with a winter build.

Keeping the faith

Alison Finch, ceo and co-founder of So Gecko, tells REI why the domestic PV market is still a force to be reckoned with, despite a fall in installation rates

I was recently invited by Solarplaza, organisers of the popular Solar Future events, to respond in a 15-minute presentation to the question "Will PV Grow as Fast as the Internet?"

Although the answer to the headline question is obvious, a few moments' thought raises a more interesting sub-text: what is it exactly that is driving the residential PV sector at the moment, and why do consumers appear largely uninspired by double-digit investment returns?

We are a young industry, and we've had a turbulent childhood. Since the introduction of Feed-in-Tariffs (FiTs) in this country in April 2010, we've experienced a mismanaged transition from overly-generous subsidies, the introduction of additional 'qualifying criteria' for homes, and latterly an almighty furore about increases in PV module prices as part of the European Commission's seeming obsession with anti-dumping legislation.

Domestic PV installs were at their peak in the second half of 2011, and have fallen sharply since. What's more interesting is that the proportion of installs that lie between 3-4kWp has increased during that time from about half of the total, to more like three quarters. We installers have been garnering the low-hanging fruit; the consumers with the larger houses, more disposable income, and a bit of financial nous about them too.

Success is how high you bounce when you hit the bottom

A glance at regional variations adds weight to my theory. Many more installs have occurred in the South West than anywhere else. Difficult areas like London have been relatively neglected, although this is presumably partly because of specific factors such as the high proportion of rental properties and tricky access for vehicles. But still, I think it's fair to say that we have generally made our lives easy by selling attractive returns to wealthy, receptive customers.

But what of the rest of the home-owning population with suitable roofs; how well have we served them with our marketing and public relations? I am fortunate to be able to work closely with the two major industry bodies, the British Photovoltaic Association and the Solar Trade Association, and I have seen them work tirelessly to influence and educate the civil servants. But perhaps more needs to be done to connect with and inspire consumers directly.

In addition, we have collectively achieved little impact with the lending institutions and the estate agents, RICS and RIBA. In a short article I must generalise, but I've seen sufficient evidence to conclude that the lenders are lukewarm about PV on a property, and this pushes the technology into the too-hard pile as far as most estate agents are concerned.

Perhaps it's no surprise that the industry has been losing 125 installers every month on average during the first half of 2013. But, for those with the merit and commitment to stay, there are many good signs to strengthen our resolve.

Fighting talk: The recent trade war between Europe and Chinese PV manufacturers will aid the domestic PV market by sparking innovation, says So Gecko ceo Alison Finch

We have generally made our lives easy by selling attractive returns to wealthy, receptive customers

For one thing, the old hierarchy of massive Chinese companies is being shaken up, and smaller, nimbler manufacturers are coming into their own. Innovation is taking precedence over pure volume, and the consumer – and the planet – can only benefit.

Perhaps most significantly, I'm discovering more receptiveness to real supply chain thinking in the industry, and I'm doing my best to encourage it. From manufacturer, through distributor, to end installer, I'm seeing signs of convergence and mutual support. We have a good story to tell, though, so that persuasion should not be beyond us.

I am anything but warlike, but I am drawn to General Patton's inspirational words: "Success is how high you bounce when you hit the bottom". And I believe the bottom is behind us.

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Money really does grow on trees

Maddy Stuckey, marketing manager of The Wood Heating Company, discusses why the biomass installation company is looking forward to next Spring's introduction of the domestic RHI

The Wood Heating Company, which is based in Cramlington, Northumberland, has a biomass heritage that stretches back over 30 years. We have been helping those in the non-domestic sector make the most of the existing RHI scheme which has been up and running since November 2011. For example, we have installed two separate projects comprising twin 100kW Herz wood chip boilers for John Trevelyan, owner of Netherwitton Estate, came when he decided that the combination of rising oil prices and attractive government support made biomass too appealing for him to resist.

Mr Trevelyan says: "I first looked at biomass heating in 2005, but at that stage it did not stack up financially. Now that oil has gone from around 28p to 65p per litre the maths are very different.

"Also, the introduction of the RHI tipped the balance in favour of biomass – or in my case specifically wood chip.

"I am very pleased with the work done by The Wood Heating Company. The projects have both run on time and have stuck to the agreed budget.

"They are professional and communicate well and understand the client's needs. The icing on the cake has been their after-sales service, which in my case has been second to none.

"Having the managing director come out to sort a minor problem on a bank holiday, even after being told it can wait until normal working hours, is pretty special customer service in my opinion."

The Wood Heating Company has its own in-house design and project management team who handle every aspect of their customers' projects, taking full responsibility for the design, installation, commissioning and maintenance of the installation.

Managing director Mike Blakeley adds: "To the best of our knowledge we are the only biomass boiler installer in the region who can offer this level of service, and we believe it is critically important in providing the very best customer experience.

"The announcement of the domestic RHI will allow people to invest in green technologies with confidence and provides an added incentive because they can make some extra cash as a reward for generating their own heat; who wouldn't want that!"

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Keeping up appearances

Biomass has a perception problem which needs addressing if installers want to capitalise on the domestic RHI, says Organic Energy's **Andy Boroughs**

Myths and misconceptions about biomass are not only common, some of them are downright funny.

I told an acquaintance the other day that I was involved in renewable energy, specialising in biomass boilers. He asked me if my customers minded the smell.....

So who's fault is it that even in 2013, many people don't know what biomass is, don't realise its a clean and green energy source, or hear the word and picture a large scale power station? Or in the case of my acquaintance, something along the lines of an oversized compost bin.

Well, while no-one is particularly to blame, perhaps we are all at fault for not realising that we as suppliers, distributors, installers and engineers have another role to fulfil – that of educator.

Ironically, the big energy companies are probably doing a better job of sparking interest in renewable energy than the industry itself. There's nothing more likely to get consumers considering the alternative than seeing their bills rocket. As traditional fuel bills rise, and with the introduction of the domestic RHI, we are no doubt on the crest of a period of sharp growth for our sector.

But we will miss out on this opportunity if our potential customers don't know what it is that we are offering.

They know what a solar panel is, they see them increasingly on rooftops, they know about FiTs. But if they think a biomass boiler is somewhere between anaerobic digestion and industrial scale wood burning plants, then we have a problem which isn't even remotely funny on our hands.

The government recently attempted to declare the success of its Green Deal by announcing that the number of energy efficiency measures being installed were on the rise thanks to the fanfare and publicity around the scheme. This was perhaps an effort to disguise the real story that only a handful of households had carried out energy saving improvements as part of the government's £3bn Green Deal programme in its first six months.

You have to give the government credit; if the Green Deal itself is looking like a white elephant, at least it can apparently claim some kudos for educating the consumer on the best way to save money on their energy bills.

So perhaps we need to take a leaf out of the government's book and when what we're doing isn't working, find another way to highlight our success.

Perhaps we are all at fault for not realising that we as suppliers, distributors, installers and engineers have another role to fulfil – that of educator

That means we need to change the terminology we use: we need to be talking about wood burning more often than biomass; we need to make it clear to consumers that the Renewable Heat Premium Payment is effectively money off the cost of the boiler and that the Renewable Heat Incentive means quarterly cashback payments which can, in some cases, more than cover the cost of the fuel.

Image conscious: Shattering public misconceptions of renewable energy will dramatically boost uptake, according to Andy Boroughs, Organic Energy

The industry needs to take the lead in educating the consumer – talking in plain English, demonstrating its technology, showcasing its successes. I'm not advocating the dumbing down of renewables, simply a way in which we can debunk the myths. Installers are a key part of this process. With the right training and skills, they are the people on the ground talking to potential customers. They are not only the installers of systems but often the front line salespeople too. If they can remove the confusion for the customer who will then be able to feel secure in exactly what it is he is buying, then biomass will no longer be a dirty word.

Forward motion

Chris Davis, business development director for Dimplex Renewables, considers what exciting business opportunities lay ahead for heat pump installers

After years of frustrating delays, the domestic RHI is finally moving forward and the reception from the industry has been rightfully positive.

The rates set by DECC look good and they have created a real incentive for consumers to invest in heat pumps. Whilst there are still some concerns with certain elements of the scheme, there is no doubt that the RHI will help homeowners to reduce their dependence on increasingly costly fossil fuels and open up new opportunities for installers.

This, together with improved efficiency, easier installation and quicker paybacks on the latest market leading products, means that high quality, highly efficient air source heat pumps from reputable manufacturers are becoming a compelling product for installers to offer to their customers – particularly for retrofit projects in larger, older, off-gas private homes.

The coming months are a critical period for MCS approved installers

Although the initial capital cost of switching to a heat pump system can seem off-putting at first, oil price hikes of up to 30 percent in the last two years mean that investment in an air source heat pump, with lower running costs, RHI payments and payback periods now as low as five years, is often a better financial option than replacing a traditional oil boiler. And now is the time for installers to capitalise.

One of the most important aspects of the new scheme for heat pump installers is that DECC is rewarding higher efficiency with higher payments.

RHI payment for heat pumps will be based only on the renewable heat content of the heat they produce which means higher efficiency heat pump systems will benefit from both a larger RHI payment and better savings on running costs.

Together with additional funding for metering and monitoring, this will encourage end users and installers to focus on higher quality, higher efficiency systems like the new Dimplex A Class.

There is also added incentive for homeowners to act now thanks to continued funding through Renewable Heat Premium Payment (RHPP).

The RHI will begin in spring 2014 but all installations from July 2009 will be eligible, subject to meeting the necessary criteria. It means anyone installing a heat pump now can receive RHPP funding to help with upfront costs - which is inevitably the biggest barrier to installations - and still be eligible for the RHI.

Now is the time for installers to capitalise

Although the value of the RHPP will ultimately be deducted from the overall RHI payment, this represents a great ' interest free' contribution towards the investment costs. It will ensure the coming months are a critical period for MCS approved installers and they must make the most of additional tools and resources from manufacturers if they are to stay ahead of the game and reap the biggest rewards.

Whilst it is useful to attend generic technology training offered by commercial training providers, it is also vitally important to work closely with your equipment manufacturer of choice – who, after all, are the experts in the technologies and can relay the specific advantages of their products. There has never been a better time to make the most of specific product training opportunities, discover support tools from manufacturers and see how their latest products can help home owners cut their fuel bills.

RHI has created opportunities for heat pump installers. Now is the time to go and grab them.

Opportunity knocks: There has never been a better time to be involved in the heat pump market, says Chris Davies, Dimplex

Sky's the limit

Ecoskies is reaching out to installers to beat the competition by booking early on renewable heating courses ahead of next spring's introduction of the domestic RHI.

Darren Gilman, Ecoskies sales manager, said: "To get the biggest rewards you need to be in the market early. The most successful PV companies are those who got involved in the beginning. Preparation also takes time. You'll need to book on a course, get certified, and then register for MCS. Even if you start now whilst the market is quiet this is likely to take two to three months.

"At the moment there is availability on courses and discounts to be had. At the height of PV's growth we had a three month waiting list! Taking the time to learn now also means that you won't be sat in a classroom when the market is booming."

Money talks: Ecoskies has introduced flexible payment on some training packages to help SMEs

Whether you are a PV company wishing to expand into RHI technologies, or a plumbing and heating company looking to get involved in renewable installation, Ecoskies says it has a course that suits you. The company has also introduced a payment scheme allowing installers to spread the cost of training over six equal monthly payments on selected packages.

Talking tech: CAT will be running BPEC's solar thermal course throughout 2013/14

Alternative thinking

The Centre for Alternative Technology (CAT) in mid-Wales was founded in the early 1970s. A pioneer in the world of renewable technology, the Centre says it has been developing educational programmes for interested parties for the past 40 years. Maintaining its position at the forefront of the industry, CAT has been involved in the development of both the City & Guilds' solar PV qualification and the precursor to the HETAS Biomass for Installers course.

Both of these courses, along with the BPEC Solar Thermal course, are running at CAT in 2013-14 and are aimed at industry professionals looking to diversify into the renewable technology sector. One participant on the most recent HETAS Biomass for Installers course said: "I'm getting more and more customers who are asking for cheaper alternatives to traditional fuels, so I've got to try and educate them and push them in the direction that they'll be happy with."

CAT is also encouraging installers to build up their qualifications following the announcement of tariffs for the domestic RHI.

CAT engineer Adam Tyler added: "Our courses are there to make sure there are good quality installers out there. We're not aiming at the mass market. The focus on all the courses is in developing good installers."

Getting to grips

Worcester, Bosch Group offers a range of product specific training courses across its Greenskies range of solar thermal collectors, Greenstore ground source heat pumps and Greensource air source heat pumps from its Worcester academy and network of training centres.

Most recently, Worcester has added a one day training course to support its new Greenstar Plus Hybrid system, designed to allow installers to get to grips with the heat pump/boiler hybrid system. In addition, for installers who are new to the market for solar thermal collectors and heat pumps, Worcester is also offering a one-day renewables overview course, which examines specification opportunities and the key features and benefits of each technology.

To further support installers who wish to capitalise on the business opportunities provided by the renewables sector, Worcester also offers seminars to aid MCS accreditation and PAS accreditation for those installers who are keen to seek Green Deal approval.

Dual fuel: Worcester, Bosch Group's latest addition to its training portfolio is for heat pump/boiler hybrid systems

Down to EaRTH

Purpose-built environmental and renewable technologies hub Bicton EaRTH has spent the first half of 2013 adding to its range of training courses.

The centre opened a brand new, purpose-built HETAS-approved biomass training facility in July and five-day courses have run since September. The course is for domestic installations and is designed to give participants the tools to advise clients on fuel types, storage options, system design and installation specification.

Other courses include a four-day solar PV installation course aimed at existing electrical operatives who want to increase their working capacity to include the installation and/or maintenance of small scale systems.

A three-day solar thermal course covers the fundamental working principles of solar thermal hot water systems and the regulatory, installation, commissioning and servicing requirements and includes hands on exercises to include installation, filling and flushing of panels and the commissioning of installation. Bespoke courses can be arranged for commercial group bookings.

The centre also offers Part G Unvented and Water Regulation courses as well as a four-day heat pump installation and maintenance course.

Additionally, EaRTH runs a five-day Green Deal Advisor course that leads to a Level 3 Diploma in Domestic Green Deal Domestic Advice and comprises Domestic Energy Advisor and Green Deal components, with qualified DEAs needing only to complete a two-day top-up course.

Trading places: Bicton EaRTH has run biomass courses from its brand new HETAS-approved training facility since last month

Product power: Panasonic's PRO Academy in Bracknell is fully kitted out with the manufacturer's heat pump range

Panasonic pupils

According to Panasonic, its PRO Academy located at the company's UK HQ in Backnell is the ideal environment for contractors, installers and specifiers of the company's heating and cooling systems to learn about the new products as well as design, installation and commissioning skills. Kitted out with working units from Panasonic's Aquarea heat pump range, the training room also demonstrates the latest innovations to the gas-driven GHP system and the company's range of controllers.

Panasonic PRO Academy is designed to bridge the gap between text-book theory and hands-on learning. Training and technical manager, David Livingstone, said: "It is encouraging to see installers still committing to attend training days. We realise that it is often difficult to set aside time for training and it is for this reason that we also offer an online resource. The numbers for the PRO Club continue to increase on a weekly basis, so we aim to keep our online portal as up to date as possible."

Center point

Plumb and Parts Center, and its partner Sevenoaks Energy Academy, are helping installers by offering a range of BPEC and HETAS accredited renewables training courses, including:

Solar thermal systems – For installers looking to learn how to fit solar thermal, this course is run over four days and is designed to allow candidates to install and maintain any of the common systems in the UK safely and efficiently.

Heat pump installer - This course has been designed to meet the requirement of the National Occupational Standards, and is recognised as a demonstration of competence for MCS. It consists of a training/reference manual to be read before a four-day training session which includes practical and system design elements before finally completing a practical and written assessment.

H005 Biomass - HETAS – Installers looking to branch out into this growing market are encouraged to check out the H005 Biomass course which covers wood log gasification boilers, chip and pellet boilers and appliances for domestic to light commercial applications up to 45kw. The course combines both theoretical and practical elements so participants need to make sure they bring their safety gear.

Confidence building: Plumb Center's various training courses are available at eight training centres across the UK including its Sustainability Building Centre in Leamington Spa

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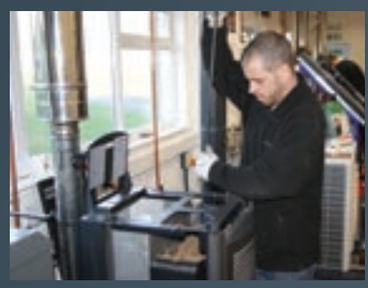

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Climbing the ladder

Daikin UK is actively supporting a new Jobcentre Plus scheme to help unemployed installers back into work. The programme, designed in partnership with the National Skills Academy for Environmental Technologies, is designed to provide out of work plumbers, heating engineers and electricians with an opportunity to learn new 'green' skills. This should make them more employable in a job market open increasingly to those trained in renewable energy systems.

Courses on offer as part of the Supporting the Unemployed into Employment scheme will include training in renewable technologies such as heat pumps, solar PV and solar thermal systems. Installers successfully completing the training will be given free registration on the National Skills Academy for Environmental Technologies' Register of Trained Installers.

John Durbin, manager of Daikin UK's Training Department, which has also launched a new online booking system for its installer courses, said: "This is a very positive move, which supports the type of training we offer and will help give renewed confidence and open many new doors to installers. It will also provide them with more awareness of the wealth of work opportunities now available to them under the new domestic RHI."

Back to work: Daikin is offering training in heat pumps, solar PV and thermal under a Jobcentre Plus scheme for installers currently out of work

Real deal: The NAPIT Bristol Training Centre features fully functioning solar PV/thermal, combined heat and power pump and biomass installations

Go green with NAPIT

NAPIT Training provides industry approved training that is certificated by City & Guilds, Blue Flame and BPEC. A wide range of training courses for installers are available at NAPIT's sustainable Premier South West Training Centre, in Bristol.

The NAPIT Bristol Training Centre features fully functioning solar PV/thermal, combined heat and power pump and biomass installations which all serve to demonstrate the wide range of renewable energy technologies available to view by customers of registered installers, who can also arrange use of the centre as their very own demonstration showroom.

From courses on Biomass technologies and Building Regulations to the Part L Energy Efficiency course, NAPIT Training aim to get any installer the right qualification for their needs.

NAPIT are also a registered Green Deal Certification body and offer training for renewable energy installers to become Green Deal Advisors, helping them take advantage of the government's landmark scheme.

TEAM work

TEAM has announced further dates for its heat metering training course for the RHI. This CPD accredited, one-day training course is designed to appeal to installers and designers of renewable heat installations who are under pressure to correctly specify and install heat meters which provide high quality data.

TEAM says the course – to be held in Bristol, Leeds and Milton Keynes – has been developed to equip attendees with knowledge of heat metering for RHI entitlement using real life case studies. It highlights good practices and discusses pitfalls and how best to avoid them. The course concludes with an open book examination. IRMA providers and Independent consultants making RHI application submissions will be able to reference their TEAM credentials with Ofgem, to demonstrate that they have a good understanding of both the requirements and practice of RHI and heat metering.

Topics covered include:

- Drivers and metering standards
- Types and cost of heat meters
- Design and specification of meters
- Installation and commissioning
- Operation and maintenance
- Data collection, monitoring and verification

Quality street: TEAM's heat metering course is aimed at those involved in the expanding RHI market looking to source accurate and high spec meters

The course will be delivered by Justine Grant, energy consultant for TEAM and author of the *Guide to Good Practice: Heat Metering for the RHI.*

Spending a penny

With water consumption becoming an increasing consideration for housing developers and the public alike, **Hamilton Scanlon**, manufacturing director or Reaqua Systems, explains why reusing greywater is the ultimate environmental and bill-saving solution

While efforts continue to educate the public to use less water and legislation requires new homes to be designed to reduce water consumption, newly launched technology is now enabling users to make more use of their water supply without any form of rationing or disruption to their existing lifestyle.

Designed for use in residential, commercial and municipal properties, this water saving solution enables the collection of waste-water (so called 'greywater') from baths and showers, and in some cases sinks, and recycles it for use in flushing toilets.

Easy to install

Suitable for retrofit as well as new-build, the greywater reuse systems reduce the mains water needs of a house or building by up to 30 per cent and are designed to be easy to install and use. A revised plumbing set up takes all waste-water from baths and showers, redirecting it through a filtration unit where it is treated with a disinfectant. This treated water is collected in a tank and piped on to supply all the flushing water needs for multiple toilets in the building.

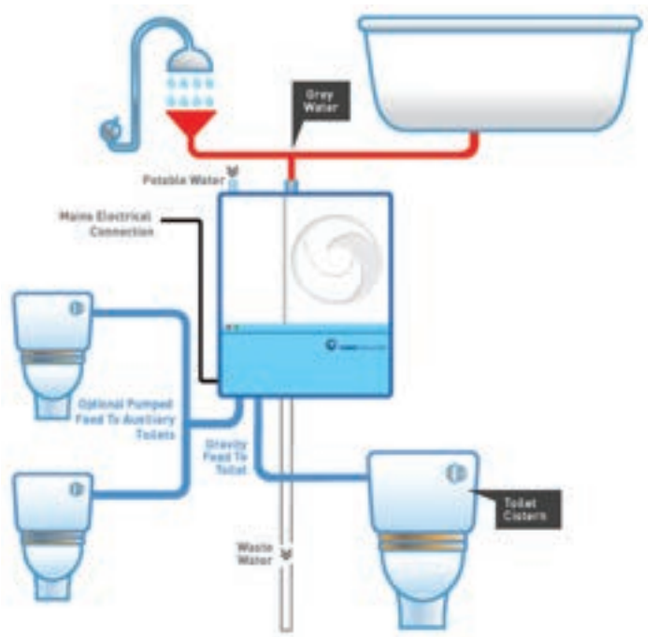
Liquid gold: The plumbing set up of a greywater reuse system can provide a more predictable water supply that it's weather-reliant rainwater counterpart

Once fitted, the water saving potential is compelling: Based on daily usage figures of 150 litres of water per person (figures from the UK organisation, Waterwise), a family of five will typically save around 80,000 litres of water each year, the equivalent of over 1,000 baths or over 1,600 loads of washing.

An optional feature of these systems ingeniously allows heat to be extracted from the building's greywater, before it's recycled, so it can be fed back into the central heating system. Fitting a heat exchanger to the greywater reuse link between the bath, shower and toilet flush recaptures the heat energy from the bathing water, feeding it back into the building's hot water system reducing fuel bills as well as enabling a two-fold reduction in CO2 emissions.

Constant supply

Greywater reuse overcomes the problems associated with other water demand management solutions such as rainwater harvesting. In the case of greywater, supply is predictable and constant as it is not dependent upon the weather, unlike harvesting where available rainwater is used to augment the water supply to a building. Harvesting also requires large scale tanks and long storage times to cope with seasonal variations, both of which create further problems of cost and water quality.



Should demand suddenly increase, the greywater solution scales accordingly – more baths and showers means more water for toilet flushing. There are other benefits too: greywater has a consistent level of acidity and, unlike rainwater, it is always just above room temperature – avoiding the formation of condensation on toilet cisterns and cooling of the room.

Avoid restrictions

Greywater reuse systems can help users avoid the need for fitting water rationing and flow restricting technology such as low-flow showers or low-flush toilets. Where these measures are employed residents experience disappointingly low flow rates from showers and the potential for blocked waste pipes. Research has shown that using low-flush toilets may not provide sufficient movement in small pipes to carry away solids, leading to blockages and flooding. From a householder's point of view, the greywater reuse solution means they do not need to make any lifestyle or behavioural changes.

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Buccaneering spirit

Industry stalwart and renewable energy pioneer **Andy Buchan** talks Paul Stephen through his journey from the earliest beginnings of sector to the present day, and explains why solar thermal still beats other technologies hands down

Andy Buchan didn't become one of the most recognisable faces in the industry overnight. His story began in 2004 after almost 25 years of exclusively installing solid fuel boilers. Having attended Worcester, Bosch Group's pilot solar thermal course, he soon got a taste for it and was fitting his first domestic system within weeks.

"We were installing a new condensing oil boiler at an old Cotswold cottage. I mentioned to the owner that he had a fantastic south facing roof with no shading and we agreed to install 4m² of Worcester's flat plat connectors with a twin coil tank. I contacted Clear Skies for the £400 grant, which was all that was available in those days, but they would only accept a BPEC qualification."

To attain the necessary qualifications, Buchan attended a four day installation course at The Centre of Alternative Technology (CAT) in Wales which, he says, was a life changing experience.

"You needed a torch if you went out at night to find the loo as the site was totally off grid. But during the four days we worked on different roof types with flat plate, tube and drain back systems. At CAT I also became interested in other green technologies which dramatically changed the way I thought about how we use energy."

Over the next year, renewable energy became a passion for Andy much to the irritation of his friends and golfing partners to whom he actively extolled its virtues on a constant basis. With the seed firmly planted, it was then only a matter of time before the entrepreneur set up one the UK's first fully fledged installation companies.

"I became very proactive in promoting solar thermal. New golfing partners were actively warned off by people who knew me!

"My business was still run from an industrial unit in Cirencester but, after my visit to CAT, it was the catalyst for restructuring my company. I gave notice on the unit and moved into an old disused barn in December 2005.

"Over the next six months we put in a new roof with solar thermal and PV. We created a new showroom and offices which we opened as The Cotswolds Efficient Energy Centre (CEEC) in April 2006."

Over the last seven and a half years, CEEC has diversified into other technologies including biomass, rainwater harvesting and both ground and air source heat pumps whilst witnessing a steady change in the profile of customer.

"Back in those early days, solar thermal was seen by customers as technology from the Starship Enterprise. But now we see the boot on the other foot with consumers telling us of energy saving products we're not even aware of so educating the public has become self-perpetuating.

Early adopter: Andy Buchan was one the first installers to enter the solar thermal market having gained his accreditation at CAT in 2004

"Our early visitors to the centre were keen to prevent damage to the atmosphere but, over the years, we have seen a big change in attitudes as people are now keen to avoid sharply rising fuel prices."

And as for the future, Andy Buchan continues to spread the word about the benefits of clean energy with his educational venture Future Renewable Energy alongside business partner and long time friend, Watson Carlill. Despite working with a variety of technologies, for this man, there is still one which stands out.

"It always comes back to solar thermal for me. It's easy, has few moving parts, needs little if any maintenance and if installed correctly, will always do what it says on the box."

Farmers market

Johnnie Andringa, ceo of Gaia-Wind, explains why the company is prepared for business to boom as farm scale wind becomes increasingly vital to rural businesses

Every day it seems we see more vitriol heaped on the dreaded windfarms. These groupings of huge turbines are, according to the middle market press anyway, the devil's work. But some different perspectives are emerging: A recent YouGov poll showed approval of government support for wind grew from just over a half to almost two thirds of voters.

And out there in the countryside, there is more good news; the rise and rise of the farm scale wind turbine. A farm scale turbine is a world away from the graceful giants of the wind farm. Similar in scale to a large tree, they are in harmony with their setting; overwhelmingly single units or very small groups. They are a unit of farm machinery, and an integral part of the farm business.

The NFU estimated that, in 2012, one in five members produced renewable energy. Dr Jonathan Scurlock, NFU chief adviser for renewable energy and climate change, said: "2012 was a difficult year for the farming community, with bad weather hitting incomes hard. Investing in renewable energy provides additional earnings at a time when budgets have become much stretched."

RenewableUK, added: "The UK has the most powerful wind resource in Europe and this has provided a vital source of income for farmers, helping to preserve rural communities in Britain."

The analysis, from NatWest, RBS and RenewableUK showed that farmers earned as much as £50,000 a year from generating their own wind energy.

As prices soar, the sustainability of rural homes and businesses is put under ever more pressure. Renewable energy offsets costs and provides a buffer against increases - this has often been the difference between financial success and failure.

At Gaia-Wind we see this as a landscape of fantastic opportunity for manufacturers and installers. And here's how we are geared up to take full advantage:

Country life: With a stable Feed-in Tariff regime and generous tax breaks, the farming community poses a considerable growth market for wind installers, says Gaia-WInd

- An estimated 50 per cent of the 200,000 holdings in the UK are unable to use three phase power: Gaia-Wind has opened up this market with the introduction a Single Phase option for the 133 model turbine. This move enables tens of thousands of previously hampered rural homes, businesses, smallholders, crofts and farms, to aim for energy independence.

- We have also introduced our new Self Raising Tower - a motorised turbine tower set up to enable a crane-less install. This removes the cost of a crane and driver and enables installation of a Gaia-Wind turbine using normal farm equipment even on sites with difficult access.

- After some turmoil, the Feed-in Tariff is now stable - for a couple of years at least.

- Farmers looking to invest in renewables have been granted a huge window of opportunity by HMRC: A massive increase in the annual investment allowance (AIA) from £25,000 to £250,000 - giving 100 percent tax relief on investments, for the next two years. This allowance means that a business owner can offset the entire cost of even several small wind turbines against their income tax in year one. So for example, investing in one turbine at around £45,000 means the net cost of the turbine for a 40 percent tax payer would be £27,000. So, payback time on a Gaia-Wind turbine based on the current Feed-in Tariff drops from 5.3 years to 3.4 years.

So: Whichever way you cut it, that's a lot of potential installs.

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Raising the Bar

SNA Europe md **Mark Heywood** tells REI why its brand Bahco is a leading light in its field plus the importance of installers using high quality tools

REI: What services do Bahco provide for the renewables sector?

MH: Bahco is one of the world's leading hand tool brands, with manufacturing centres in the UK and across mainland Europe.

Its range of over 12,000 different products includes tool bags, pouches and lanyards designed to help installers working at height to avoid dropping tools, with the inherent risk of injury to anyone below or of damage to machinery or operating systems.

Bahco also manufacture a wide range of heavy duty bolting tools and related equipment highly suitable for use within the renewable energy sector.

What is unique about the company's products?

One of the distinctive features of Bahco tools is not how they look but how they feel – and how their ergonomic design and manufacture provides the best possible protection against hand muscle strain or injury, which can affect even the toughest hands.

Using any hand tool requires the use of 42 different muscles which can be injured or strained through repetitive use by trade professionals.

All tools bearing Bahco's ERGO symbol have been designed and manufactured using the company's unique 11-point scientific programme, developed in association with ergonomics experts and professional users.

Other key features of Bahco tools can be summarised in four words: strength, quality, durability, performance.

How do you work with installers?

Although Bahco tools are supplied via a national and international network of specialist trade suppliers, the company's technical team are always happy to discuss with installers the company's range of hand tools and safety equipment. Visit: www.bahco.com or call, in the UK, 01709 731731.

Bahco designers, based in Sweden and in Europe, are among the best in the world. The safety of trade professionals using their tools or equipment is their first priority, especially when working at height or working live on electrical systems.

What feedback do you receive from renewables installers?

Bahco frequently consults user groups for their views on how new products are meeting their needs, especially in delivering consistent performance in all working conditions and proving safe and comfortable to use. Feedback from independent testers and the product editors of trade magazines is invariably positive.

How important is it to work with high quality tools?

Professional installers demand top performance from their hand tools, not just today but for many years. They need tools they know they can rely on to be safe, protect their hands and enable them to work to the high standards they take pride in achieving.

A good example of Bahco's stringent testing can be found in the company's recent launch of a new range of heavy duty and electricians' side cutting pliers which in rigorous testing outlived 50,000 hard wire cuts. Insulated screwdrivers are tested at 10,000V to ensure that they can be used with confidence when working live at 1000V.

How is business faring in the present economic climate?

Sales of Bahco tools have remained consistent during the economic challenges of the past few years. Trade professionals will always need new tools or to replace those they have worn out. Bahco also work with apprentices and students at five leading construction skills colleges.

What are the future plans for Bahco?

To continue what the company has been doing very successfully for the past 127 years: designing and manufacturing hand tools and safety equipment which not simply meets the demands of professional users but exceeds them.

Image credit: Rope Access Sverige AB, www.ropeaccess.com

Air of mystery

They claim to heat hot water day and night at all times of the year but with the MCS still weighing up whether to grant full accreditation, what place do thermodynamic panels have in the renewable energy marketplace? **Paul Stephen** speaks to a manufacturer and independent consultant to find out.

Any solar product which claims such an impressive and game changing performance is bound to create some scepticism. Having initially been eligible for the RHPP and RHI due to its Solar Keymark accreditation, the MCS opted to suspend registrations of the product last November amid confusion over whether the technology more closely resembled heat pump or solar thermal systems.

Until the MCS concludes its investigation, installers will remain in the dark with one question on their lips: Are they the next big thing or simply too good to be true?

It's a kind of magic

Jake Ambrose, technical director of Essex-based Magic Thermodynamic Box Ltd, gives the manufacturers' perspective

My company came up with the revolutionary idea of heating Domestic Hot Water (DHW) by using the laws of thermodynamics. It's a simple process of heating the water by taking the heat from the compressed gas which is then passed to the external thermodynamic aluminium panel where the gas evaporates and absorbs the heat from the external climate. Due to the uniqueness of the direct gas evaporation principle, the external thermodynamic collector can absorb more heat during the day and night in all climates.

From the installers' point of view this thermodynamic system is a hassle free product to install due to the simplicity of the installation. It can typically be done in a day. Also the basic operating principle of thermodynamic systems is simple to understand as basically it's a freezer in reverse.

Traditional solar thermal panels heat DHW water in tube collectors as opposed to a thermodynamic system which uses refrigerant. This new system allows the panel to absorb the heat form the atmosphere where a solar thermal panel requires direct heat from the sun. The refrigerant enters the panel as low as -25 °C which allows the thermodynamic panel to absorb the heat even on a cold winter day. Thermodynamic panels can be placed on a wall and it's not necessary for it to face south. This allows for a better solution for the installer as there are more options that can be chosen to locate the panel. Conventional solar thermal collectors' best performance can only be achieved by installing on roofs facing between south east and south west.

With more and more legislation being introduced in relation to green energy, it is only going to put increased pressure on home owners and businesses to produce more energy from renewable sources.

There are a variety of systems, single panel units supplying potable domestic hot water as a stand-alone system; retrofit units to existing water cylinders with single panels; and central heating or swimming pool units having multiple panel configurations.

Thermodynamic systems not only produce hot water from a renewable source but it also uses a refrigerant gas, R134a which has a lower GWP (Global Warming Potential) compared to R407C & R410A. This makes the Magic Thermodynamic System even more of an environmental friendly product.

One of a kind: Thermodynamic panels have the unique capability to provide hot water at all times of day throughout the year, says Jake Ambrose, Magic Thermodynamic Box Ltd

Thermodynamics is so new that the systems have yet to be classified by the MCS and are not on the list for RHI payments in 2014. However, the Magic Thermodynamic Box is a key member and sits on the Thermodynamic MCS steering group to include this system under the MCS scheme so that customers can benefit from RHI tariff.

Proceed with caution

Bruce Boucher of Bruce Boucher Consultancy gives independent advice for installers considering working with thermodynamic technology

The product and the variants of it are based upon the heat pump principle. Simply through the basic refrigeration process you upgrade in this case domestic hot water from an average incoming water main temperature of 7-10 Deg C to a useable temperature in the region of 55C, using the heat pump principle. The heat pump is sometimes described as a refrigerator working backwards, instead of throwing the heat away when you remove heat from the food in your domestic refrigerator, you remove heat from the surrounding ambient air, and heat a secondary fluid through a heat exchanger (in this case water) for use in the domestic property.

The thermodynamic solar panel is in effect a flat plate collector suitably located on a building structure containing a well-known refrigerant Ri34a. The first obstacle is that it should only be installed by a qualified refrigeration engineer or an appropriate person trained to handle refrigerants.

The difficulty for the industry is that the products we are aware of in the UK use pre-charged refrigerant piping. The refrigerant charge is critical to the performance of the system, therefore should any escape during installation, this will affect the performance and it is illegal to let any refrigerant escape to atmosphere.

Sometimes the internal refrigeration system is called a 'Magic Box' which is silly and misleading. However the claim made to heat water 24/7 is correct as the ambient air is available to extract heat most of the time.

The higher the ambient temperature, the greater the coefficient of performance (COP). Simply put it is the ability to convert low grade energy to high grade energy as efficiently as is practical, using the heat pump cycle. Again, for simple understanding, were you to invest £1 of electricity by the action of the reverse refrigeration cycle, you would obtain more than £1 worth of energy into your hot water, perhaps between 2.0 to 4 COP depending upon the temperature of the outside air.

This type of technology has been around for decades in the principles as described. The most common and possibly the most obvious application is to use this type of system to heat whole homes.

As far as costs are concerned, all claims should be accurately quantified. More importantly, all systems will differ in output subject to the external panel location, quality of the product and quality of installation. Some form of metered results, to substantiate a system's performance, such as a Class 2 Energy Meter is needed to measure in kWs the hot water input to the cylinder. If the product eventually qualifies for the RHI, heat meters will be compulsory.

Independence day: Renewable energy consultant Bruce Boucher would like to see more third party testing of thermodynamics before accepting manufacturers' claims

Like many products which sell within the marketplace, in the wrong or unscrupulous hands the product claims of performance should always be quantified or verifiable preferably through a third party input.

Infinity and beyond

Infinite Energy has recently completed a 526kWp roof-mounted agricultural solar PV installation using modules and inverters supplied by Krannich Solar.

The installation is at the Rand Brothers' farm in Hertfordshire, which has over 9,000 acres of arable production as well as an extensive grain depot which holds up to 120,000 tonnes of grain.

The grain dryers and elevators have a significant electricity demand throughout the year and rising electricity prices were adding thousands of pounds a year to the farm's electricity bill. Costly diesel generators were also required to supplement the power supply during times of peak demand making PV a logical solution.

The system, which will produce nearly 470,000kWh of energy per year, uses 526kWp of Axitec 250w modules and 4.25km of K2 SpeedRail that were all supplied by Krannich Solar. The installation is spread over several south facing and east/west facing roofs of one acre in total. Although this means the system has a lower peak output than a fully south facing installation would, the addition of the east/west orientations means that the system will benefit from a longer generation period throughout each day. This long generation window provides a more usable production curve to maintain electricity supply to the grain stores throughout the whole day.

Go west: The Rand Brothers' 526kWp installation has been fitted on an east/west orientation to increase the hours of electricity generation

The Rand Brothers can expect an annual saving on their electricity bills of over £30,000 and the farm's carbon emissions will be reduced by 234 tonnes of CO2 per year. Rob Rand said: "We are very impressed with Infinite Energy's installation and we are already reaping the benefit with cost savings on our electricity consumption. We now have more power available on site, which means we no longer have the extra expense of the diesel generators, and we will also earn a steady annual income for the next 20 years from the ROC subsidies."

Ploughing into renewables

Whitefield Farm, near Penistone, Sheffield, has joined the rapidly growing number of farms turning to solar PV to save on electricity bills and generate an alternative source of revenue.

Norcroft Energy installed a 50kW solar system over two roofs on site at Whitefield Farm - a total of 198 solar panels. The annual Feed-in-Tariff for Whitefield Farm is estimated to be £5,103, with annual savings of £8,432 from generating its own energy.

"We have had monthly electricity bills of between £1,200 and £1,500, the majority of which is used by the dairy to process milk on our farm. We have been looking at ways to reduce our costs and generating our own electricity seemed like a great way to do this. We have a large south facing roof on our site so after talking to Norcroft Energy, it made perfect sense to use this space to install multiple solar panels to generate our own power and make a profit at the same time," said dairy owner Nigel Darwin.

High society: Whitefield Farm owner Nigel Darwin predicts annual savings of £8,000 on electricity bills from his 50kW PV array

"Norcroft Energy was the perfect choice. With Philip coming from a farming background, he had the specialist knowledge and experience to help us make an informed decision. Now the solar panel installation is complete, we are looking forward to reaping the benefits."

Philip Mosley, managing director at Norcroft Energy, added: "We find that farm owners can benefit in three ways from solar PV technology. First, they have the reliability of generating their very own power – a big consideration with energy prices continuing to increase. Secondly, they can make a profit with their guaranteed Feed-in Tariff payments, and thirdly they can make more profit on the Export Tariff."

Big business

Amid mounting pressure in the commercial sector to cut carbon emissions and costs, Phil Hurley, managing director at **NIBE**, explains how installers can reap the rewards from growing demand for renewable heating solutions

With the government's stringent 2020 carbon reduction target drawing closer, the onus is on the energy-guzzling non-domestic sector to find ways to cut consumption – not only to meet criteria, but to streamline costs too. As such, renewable technologies that can fulfill large-scale heating, hot water and cooling needs efficiently and cost-effectively – such as ground source heat pumps (GSHPs) – are becoming increasingly popular for commercial applications. What's more, thanks to financial incentives, the economic case for businesses to invest in renewable heating has never been stronger.

To make the most of these incentives and meet official criteria, businesses need to rely on fit-for-purpose technologies and a dependable workforce to specify, install, and maintain them correctly. This has created an unprecedented opportunity for the industry, making the commercial sector more important than ever. However, with all this at stake, and to make the most of rising commercial demand, installers mustn't lose sight of their crucial role in building future success.

The economic case for businesses to invest in renewable heating has never been stronger

Staying ahead of the game

With cost often the driving force behind everyday decision-making in the commercial sector, ultimately the switch to sustainable heat must make financial sense for businesses. Installers are often the first point of contact for those assessing their options, so staying up-to-date with the financial drivers in place to boost uptake is vital. Well-informed installers can make a bespoke economic case for large-scale installations of renewable technologies and advise commercial customers on the setup they need for best results.

High initial outlays are often the deciding factor for those considering investing, so it's particularly important that customers are aware of schemes designed to ease up-front costs. The Enhanced Capital Allowance (ECA), for example, writes off the cost of energy efficiency measures against companies' taxable profits, while the Carbon Trust offers interest-free loans to help cover the investment.

Alongside these short-term drivers, an in-depth understanding of the initiatives to incentivise uptake in the long run is also essential. With its offer of index-linked payments

Installers mustn't lose sight of their crucial role in building future success

for 20 years, phase one of the RHI has played a central role in encouraging investment to date. However, uptake has been slower than expected, with biomass representing the majority so far. This partly stems from an assumption that it's the most straightforward option (as a direct replacement for traditional boilers) – but this overlooks other technologies, such as GSHPs, that may be better suited to the application. With government proposals to double RHI tariffs for commercial ground source investments, it is also more viable than ever – so it pays to consider all the options.

Staying up-to-date with the financial drivers in place to boost uptake is vital

There for the taking

To this end, the significance of training becomes obvious. In the same way that business people have a vested interest in minimising costs and making use of financial support, tradespeople must make it their business to be experts in the latest technical developments, incentives and legislation so they can inform commercial customers. Proper training prepares the trade to help businesses reap the full sustainability and economic benefits of renewables, and guide them seamlessly through the installation process. This means everything from advising which technologies are best suited to each application, and eligibility for RHI payments, to specific technical details, such as metering setups and borehole requirements.

The rising demand for renewable heating in the commercial sector signals an enormous opportunity for installers. In this growing market, knowledge really is king, and those who are equipped to advise customers with confidence will be best placed to benefit.

King coal no more

The Borough of Gedling, near Nottingham, is set to become one of the top renewable energy providers in the UK thanks to a new 5MW solar farm that is to be established in the borough.

Gedling Borough Council approved plans on 07 August for the solar farm to be installed in the new country park on the former Gedling Colliery site.

The 23,328 240W solar panels that will make up the farm will triple the amount of clean energy provided in the borough from 2.38 megawatts of electricity to 7.84 MWe, and could generate enough renewable electrical energy to power 1,000 households - a small village.

To reduce any impact of the farm on local wildlife, developers Re-Fin Solar will install nestboxes and mounds to enhance the ecological habitat of the area.

Councillor John Clarke, leader of Gedling Borough Council, said: "The solar farm will provide long term renewable and sustainable energy for our residents. This, in addition to the recent announcement of plans for the Country Park, shows our commitment to reducing our carbon footprint and providing a solid sustainability plan for future generations."

The solar farm is expected to be installed by 2014.

Turning tables: The site of the former Gedling Colliery, Nottinghamshire, will now be used to generate clean power

Fairytale castle's happy ending

An historic country estate famed for its fairytale 14th century castle has saved around £100,000 on its energy bills and cut carbon emissions by more than 400 tonnes, after turning to renewable energy.

Towering success: Since 2010, Scotney Castle's 250kW biomass boiler has saved more than 400 tonnes of carbon emissions and cut annual fuel bills by £20,000

The National Trust, which owns Scotney Castle in Kent, recruited biomass installers Rural Energy to provide hot water and heating for the Victorian mansion at the heart of the 770-acre estate.

The biomass boiler also serves the visitor reception, shop, tearoom and offices at the castle, near Tunbridge Wells.

Rural Energy installed a 250kW Herz BioMatic wood chip boiler in an investment programme at the castle, located in a beautiful wooded estate, near Tunbridge Wells.

Since it came into operation in 2010 the castle's Herz boiler has generated an estimated 1,258,600kWh of renewable heating and cut more than £20,000 per annum from the energy bills.

The boiler is powered by wood harvested from the estate as part of its conservation work and replaced an old oil-powered heating system.

Paul Clark, Managing Director of Leicestershire-based Rural Energy, said: "The National Trust has been quick to see the many benefits of biomass technology and how it can slash energy bills and reduce carbon emissions.

"The project at Scotney Castle is a prime example of this. Its biomass boiler is powered by locally sourced wood as part of its conservation and woodland management on the estate and the aim is to be self-sufficient."

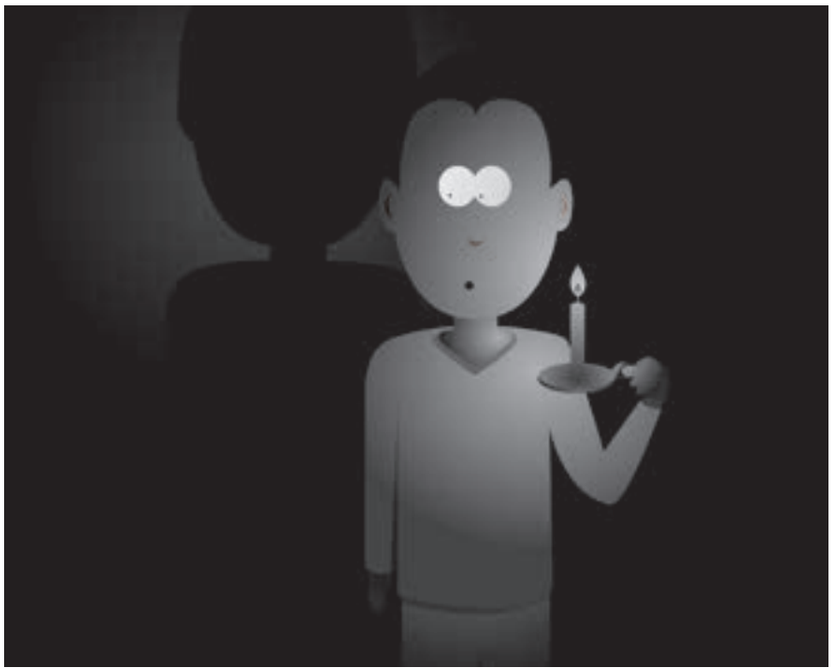
Blackout Britain?

With recent warnings from Ofgem of likely power shortages by 2015 and inevitable energy price hikes, Rupert Higgin, md of renewable distribution company **GreenKit**, discusses what this means for businesses and what steps can be taken to avert an energy crisis

A wave of concern has been rippling across the UK following the news from Ofgem in June warning of the increased likelihood of significant power blackouts in the UK by the middle of the decade.

The likely power cuts have been put down to the fact that spare electricity power production capacity could fall to 2 percent by 2015, leaving businesses with an increased risk of blackouts. It's a case of basic economics – demand is expected to outstrip supply and there simply isn't going to be enough to go around.

The financial crisis, tough emissions targets, the UK's increasing dependency of gas imports as well as the closure of ageing power stations have all contributed to the heightened risk of shortages. But what does this mean for businesses and is there an opportunity for renewable installers?



It is becoming increasingly important for businesses to prioritise green credentials

Currently, many companies are unprepared for business disruptions caused by power blackouts and many are unaware of the true cost and impact they can have on their operations. Whilst most power failures from the national grid only last a few hours, some blackouts can last for significantly longer affecting production output, critical infrastructures and major utilities including telecommunication networks, financial services, water supplies and hospitals.

Alongside the uncertainty around supply and demand for electricity is the inevitability of energy price rises going forward.

All things considered, UK businesses cannot afford to be complacent. Rather than ignoring the warnings, organisations need to be proactive by taking control of generating their own electricity in order to protect their operations and, ultimately, their bottom line.

By adopting renewable energy system, whether solar PV or wind technologies, businesses can take steps towards reducing their dependency on the national grid. With minimal maintenance costs once the equipment has been installed and a guaranteed supply of power from the sun, converting solar power is not only environmentally friendly, it is also flexible in scope ranging from an entire rooftop solar project to just a few cells to run backyard lighting.

However, it is the back-up systems that are becoming the new area of interest for renewable generators, with their offer of protection against power cuts. GreenKit is experiencing a surge in interest in its compact, efficient backup battery system that stores surplus energy generated by solar panels during the day and keeps it readily available for when the panels are no longer generating.

Not only will these supply energy during power cuts, but appliances can be run off the battery backup instead of drawing from the grid during night hours, saving money and making the solar generated energy go further.

On another point, many companies continue to take a single dimensional approach towards their environmental responsibility, simply bolting on the necessary measures rather than fully embracing them with efficiency measures. Yet, it is becoming increasing important for businesses to prioritise green credentials, taking them to the heart of the business. Not only does this exhibit to customers a commitment to the environment but it will also help contribute to the bottom line.

Back-up systems are becoming the new area of interest for renewable generators

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 August 13
Solar PV	3140	30
Biomass	266	11
Air source heat pump	858	19
Ground source heat pump	719	15
Solar thermal	1074	14
Small Wind	128	0
Total	3650	104

Number of MCS registered installations per technology

Technology type	Cumulative number	Installed Aug 13
Solar PV	463150	6847
Biomass	3184	74
Air source heat pump	17326	210
Ground source heat pump	5639	30
Solar thermal	4854	60
Small Wind	4061	21
Total	511365	7363

(Figures supplied by Gemserv)

Generation tariffs for Solar PV (valid until 31 Dec13)

Tariff band	FiT rate (p/kWh)
<4kW	14.90
>4-10kW	13.50
>10-50kW	12.57
>50-100kW	11.1
>100-150kW	11.1
>150-250kW	10.62
>250kW-5MW	6.85
Standalone	6.85
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

Number of Green Deal assessments

Month	Assessments
January	74
February	1729
March	7491
April	9522
May	12146
June	13517
July	13645
August	13086
Total	71210

(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	0.61 per litre	2530 litres	£1,543
Wood pellets	4800 per tonne	94	24300	235 per tonne	5 tonnes	£1,175
Natural gas	1 per kWh	90	25300	0.048 per kWh	25300 kWh	£1,214
LPG	6.6 per litre	90	25300	0.48 per litre	3833 litres	£1,840
Electricity	1 per kWh	100	23000	0.147 per kWh	23000 kWh	£3,381
*Air source heat pump	1 per kWh	290	7931	0.147 per kWh	7931kWh	£1,166
*Ground source heat pump	1 per kWh	360	6389	0.147 per kWh	6389kWh	£939
Dual mode system 1						
Oil boiler (30% of heat load)	10 per litre	90	7590	0.61 per litre	759 litres	£463
*Air source heat pump (70% of heat load)	1 per kWh	290	5552	0.147 per kWh	5552 kWh	£816
Dual mode system 2						
Gas boiler (30% of heat load)	1 per kWh	90	7590	0.048 per kWh	7590 kWh	£364
*Air source heat pump (70% of heat load)	1 per kWh	290	5552	0.147 per kWh	5552 kWh	£816

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 for 2014/15)
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	7.2-8.2
Large ground source	Ground source heat pumps, water-source heat pumps, deep geothermal	100 kWth and above	3.5	20	7.2-8.2
Solar thermal	Solar thermal	Less than 200 kWth	9.2	20	10-11.3
Biomethane	Biomethane injection and biogas combustion, except from landfill	Biomethane all scales, biogas combustion less than 200 kWth	7.3	20	No change

(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

BIOMASS

What: 18th century holiday cottages brought up-to-date with modern renewable heating technology

How: A 60kW Windhager BioWIN boiler

Result: Guests no longer charged extra for electric or oil-fired heating

A listed Georgian family home and the five self-catering holiday cottages set within its grounds below the Cairngorm Mountains have benefitted from the recent installation of a biomass wood pellet boiler from Windhager UK.

Four of the cottages have been converted from a wing of the 18th century grade B listed property, and heating and maintaining a comfortable temperature in these poorly insulated granite buildings had been a constant challenge. Now all the properties are heated using Windhager's biomass system, which replaces an oil boiler in the restored Georgian house and electric heating systems throughout the cottages. Guests, who were previously charged for their heating, are now offered an all-inclusive package.

Property owner Ross Cameron said: "A wood pellet system seemed like the most effective and environmental way of future proofing our property's extensive heating requirement. The RHI scheme and The Energy Saving Trust made this possible for us and created an attractive investment for the next 20 years."

A 60kW Windhager BioWIN boiler, a 1,000 litre AccuWIN accumulator tank and a bulk pellet hopper were installed by Highland Heat and Power. Housed in a purpose built boiler room, the system is connected to the main building by 50m of pre-insulated underground pipework and via a plate heat exchanger providing separate heating and hot water circuits for both the self-catering units and the owners' cottage.

Double appeal: The installation of biomass technology has considerably improved the green credentials of The Dell of Abernethy family home and holiday cottages as well as reducing its energy costs

Ross Cameron added: "We have found the system overall to be entirely professional and care free; the installation looks great and works brilliantly. Returning guests are ecstatic about the difference not only in temperature but also in the quality of the heat – it is far superior to the stuffy feel of electric heating. Altogether I am a very happy customer."

SOLAR PV

What: Theatre set construction company opts for solar PV

How: Innovative design and installation by Shropshire-based 7 Energy

Result: Seven year predicted payback

Shropshire-based 7 Energy has completed a complex PV installation as part of an extensive eco-build project for a specialist theatre set construction company.

Set-up (Scenery) Limited was founded by Mark Wilsher in 1999 and works with West End theatres, the Royal Opera House and the National Theatre. Having grown the company from its humble beginnings in a small pig shed on a friend's farm, Mr Wilsher moved the business to a larger workshop in Cambridgeshire in 2007.

The move to new premises has now allowed him to fulfil a long held ambition to create a low-energy building, beginning with what was essentially a big steel shed.

Mr Wilsher said: "Having insulated the building to the very highest of standards and opting for 20 percent rooflights to maximise daylight into the building and therefore reduce electricity usage, we wanted to see how we could best generate electricity on site to further reduce costs.

"When we moved to our current workshop I knew it would be perfect as an eco-build project. The fact that we're able to export energy back to the grid means that the whole PV system will have paid for itself in less than seven years which is a fantastic result and means we're saving money as well as helping to save the environment."

7 Energy md, Martin Dowley, added: "It's always exciting to work with clients who are passionate about creating environmentally friendly buildings. However, there were aspects of this project that made it a challenging one. For example, the roof had a design with which we hadn't worked before and this issue was exacerbated by the fact that the outer skin of the roofing sheet was not to the specification normally required for such PV installations.

"We also had to design a system around

HEAT PUMPS

What: Castle Howard eliminates fossil fuel consumption

How: Water source heat pump

Result: 82.5 percent reduction in annual heating bills

North Yorkshire stately home Castle Howard has been the setting for many historical productions over the years, most famously Brideshead Revisited.

In 2008 the oil-fired heating bill for the main house, estate office and four residential flats was up to £80,000, and despite reducing the thermostat by 30 degrees, the owners were still using 65,000 litres of oil a year.

With over 100 staff, a family of four in permanent residence and nearly 250,000 annual visitors for tours and weddings, the house needed a reliable heating system in place. The owners considered a wood chip biomass boiler which proved unfeasible, so instead turned to energy installer Ecovision to help.

After extensive survey and planning work, Ecovision advised installing a water source heat pump system. Instead of drilling bore holes or excavating a large area of the grounds, it was advised to drain a three acre lake adjacent to the house to position the heat collecting loops on the lake bed. The loops were filled with a glycol solution which absorbs heat from the lake water even on a freezing cold day; the warmed liquid then travels along underground pipes to the house where it feeds a heat pump, creating temperatures of up to 70 degrees. The heat is then transferred through a heat exchanger to the water in the existing system which heats the original Victorian radiators as before.

Inside the house, Ecovision installed two 110kw heat pumps in the existing boiler room, which supplied two 500 litre hot water cylinders which were then linked to the existing heating pipework.

Prior to the installation, the owner estimated rising annual heating bills at £80,000 per year. After a year of using Ecovision's heat pumps the bills had been reduced to £14,000.

Historic move: The owners of Castle Howard report a £66,000 reduction in annual heating bills since swapping oil-fired heating for a water source heat pump

the high number of skylights that had been installed to ensure we didn't reduce the level of natural light into the building. The team rose to the challenge brilliantly and working in partnership with the team at Set Up Scenery, we completed the installation within the agreed timeframe."

Shedding light: Careful design was needed for 7 Energy to overcome the large number of skylights at Set Up Scenery's premises in Cambridgeshire

Who: Conal McElroy is sales director at Absolute Solar and Wind

What: Based in Glasgow, Absolute Solar and Wind is one of UFW's EC Wind Scottish resellers

One and only: Conal McElroy is focused on selling the 55KW EC Wind turbine for Absolute Solar and Wind, a reseller partner of UFW which has secured exclusive distribution rights in the UK

Absolute power

Monday

I often start the week reviewing budgets and targets, assessing what projects we expect to have contracts signed on. We have just secured the reseller rights to the 55KW EC Wind turbine exclusively distributed by UFW so we have had lots of enquiries around this product.

I need to establish what we expect to go into planning and come out as consented projects. What turbines we need to order and what our pipeline consists of. This will then need to be passed on to the turbine manufacturer, to maintain that relationship in terms of smoothing the supply chain.

I have internal discussions with my operational director to ensure that we work as a partnership in terms of project details and timeframes so there are no shocks.

Tuesday

I meet with my telesales team to discuss success rates of appointment setting, their product knowledge of the EC 55 and their ability to make a very basic desktop assessment of windspeed. We also discuss their proficiency of using Google Earth for such things as separation distances etc.

I also reflect on spending the previous week in Sweden meeting the EC wind team, viewing the manufacturing process, the tower manufacturer's plant and several installed sites. Very busy and long days but very rewarding in terms of getting real comfort from the people and product of EC Wind.

Wednesday

I meet and discuss with my sales team their client pipeline, their general week-to-week work load and productivity, and check that their site assessment skills are constantly improving.

I produce and review the quotes our team requires ensuring margin is maintained, and ensure the correct information is being supplied to the customer. I also liaise on a weekly basis with our preferred financing leasing company as we currently have approximately 12 projects where finance options are being discussed.

Thursday

I am in fairly constant contact with UFW as each project is completely unique. I often need new or additional information relevant to specific sites.

These requests will come from my sales team. I act as a conduit between sales and outside bodies as this information might need to come from the manufacturer, the planners, the Distribution Network Operator (DNO) or our finance lease company. Between me and the internal office we manage the flow of this information, ensuring that what goes back to the sales team and ultimately the customer is the correct information.

I am currently creating a new training model for my team. It is key for me that we consistently try to improve and develop our skills so our sales team understands the importance of product knowledge, site assessment and installation procedure.

Friday

We currently have two separate large scale projects which are very exciting EC 55 opportunities and which require most of my focus. This involves pulling together four or five different parties for each project from site owners, turbine distributors, ourselves and financiers, all with our own interests but all trying to reach agreement. These projects are very fluid and involve decisions and strategies being changed almost on a per call or email basis, as new information becomes available, but the end opportunity for all parties is very promising.

We are a young, hungry, professional company with ever expanding horizons and goals. We see the industry and our company going from strength to strength as we bring new projects and opportunities together and form new and exciting partnerships with like-minded companies such as UFW and EC Wind.

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