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Editor's comment

Hitting the headlines

I have just returned from an exhibition and awards ceremony that highlighted the enthusiasm, innovation and determination individuals in this industry have for the promotion and development of both renewable and energy efficient technologies.

As the Green Deal approaches, this is positive to witness, especially as we head towards the launch of our new title Energy Efficiency Installer magazine. Talking to many companies anticipating the start of this flagship event, there is a feeling that the government needs to really push the scheme in order to ensure its success. With this in mind, how utterly disheartening it was to be shown an 'article' in the Daily Mail entitled, "Families facing £2,000 bills for green heating 'that does not work in Britain". The piece is accompanied by an emotive photograph of a mother clutching her two children alongside the caption: "Samantha Claussen, who struggled to pay her heating bills, with two of her children".

The article goes on to discuss the failings of a particular heating system, which apparently works well in its home country but not the UK, as our homes are not insulated as well. Once I've written this I may well get in touch with the article's author, Nick Craven and let him into a little secret that any home will lose energy and thus money if it isn't adequately insulated.

Whilst it is easy to get worked up about the inaccurate reporting of renewables-related topics, this article highlights the need for the industry to work extra hard to push the benefits of both renewable and energy efficient technology to the consumer. We need to focus on the enthusiasm, innovation and determination that exist and pass this on to the householder. And there will come a day when even Daily Mail staff open their eyes to the merits of renewable energy.

Renewable Energy Installer takes care to ensure that the information published is accurate and timely. Articles written by contributors for publication are checked where practicable for accuracy, but are accepted and published in good faith and Renewable Energy Installer cannot be held responsible for information that subsequently proves not to be accurate.

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'The immediate impact of August's Feed-in Tariff cut has been predictably disastrous" Ardenham Energy, Harry Sheperd-Cross p14

Industry reaction to new energy minister

Energy minister Charles Hendry has been replaced by Conservative MP John Hayes.

The appointment of Mr Hayes, in what was the only change in personnel at the Department of Energy and Climate Change (DECC), surprised some in the renewables industry due to his well-publicised past opposition to wind farms.

The MP for South Holland and the Deepings has been previously quoted describing wind farms as a "terrible intrusion on our flat fenland landscape" and once labelled wind power as a failure in terms of its economic and environmental sustainability.

Reception has been mixed with the Renewable Energy Association hopeful for a change in stance from the new minister whilst RenewablesUK welcomed the skills and experience Hayes will bring to the table from his previous role as minister for further education, skills and lifelong learning.

REA chief executive, Gaynor Hartnell, said: "Given John Hayes' reported stance on energy subsidies, he might want to take a good hard look at energy policy in the round. We would be happy to meet with him to discuss the latest information on falling costs of renewables and increasing costs of other energy forms."

Jennifer Webber, RenewableUK's director of external affairs, added: "Mr Hayes brings a wealth of experience from his previous role. We know that he already appreciates the importance of providing the right training for the skilled workforce of the future, so Mr Hayes' experience at the Department for Business, Innovation and Skills will serve him in good stead as energy minister.

"(Charles Hendry's) successor will need to acquaint himself with this brief as swiftly as possible, as Electricity Market Reform must proceed without delay, so that future investment in wind and marine energy is not put at risk."

Bowing out: Former energy minister Charles Hendry (left) returns to the back benches and makes way for fellow Conservative MP John Hayes

Spot Green Deal opportunities

A qualification has been launched to help spot the potential to install energy-saving measures in homes and businesses.

The Level 2 Award in Understanding Sustainable Refurbishment (QCF) from EAL, the specialist awarding organisation for industry qualifications, has been designed in close partnership with Parity Projects, a specialist in low-energy retrofit services. The qualification will highlight how to identify low carbon business opportunities through the Green Deal, a multi-billion pound retrofit scheme. It will consist of 35 hours of learning, when builders, architects and other professionals will be taught by experts in sustainable refurbishment.

Learners will be taken through the need for energy efficient buildings, the energy relationship between building materials, systems and occupancy and how to develop their roles onsite so they can improve the energy performance of a building.

Solar advice centre opens

Sundog Energy is opening a solar advice centre at its main offices at North Lakes Business Park, near Penrith..

The drive-in centre will provide hands-on displays of typical solar PV systems to help dispel the mysteries and explode some of the myths surrounding solar PV with good honest advice, based on more than 16 years renewable energy and solar experience.

Visitors will be able to see first-hand the products that fit together to form a complete solar PV system. The display includes a full sized mock up roof showing how PV panels are mounted on a building, demonstrations of how systems can be integrated with different roof types, and examples of the various system components such as solar PV panels, inverters and monitoring equipment. They can also view Sundog's own rooftop PV system in action, a state-of-the-art 14kW system that produces a substantial part of Sundog's electricity needs as well as providing a lucrative index-linked income.

According to Martin Cotterell: "Interest in solar is on the increase and new systems are flying onto roofs everywhere. With the prospect of ever-increasing electricity bills, the solar proposition becomes more and more compelling. Yet there is still confusion surrounding the Feed-in Tariff scheme and what the benefits of solar PV really are, which is why the advice centre will provide vital facts to anyone considering solar."

The centre is also of interest to small businesses, large commercial companies, farmers and even pension funds who are waking up to the attractive financial returns that, says Sundog, currently out-perform those from the stock market, banks or any other investment opportunities. As a result, large-scale solar installations are appearing in all sorts of locations around the country.

Dual function: Sundog's solar advice centre, near Penrith, is of interest to business as well as consumers

News in brief

After over 13 years of business, Solar Twin has ceased trading.

The Rt Hon Lord Deben PC has been confirmed as chair of the committee on climate change (CCC), as approved by energy secretary, Ed Davey. DECC secretary of state,

The Met Office has launched the Wind Production Forecast Plus, a site-specific weather forecasting service for wind farms and wind energy production, with enhanced output accuracy. It provides energy generators, traders, consultants and grid operators with an accurate weather forecast to feed into their own power models, to help them predict how much energy will be generated from wind farm assets.

SolarTech renewable energy specialist, has designed and installed a new PV carport system for Waltham Forest Council, thought to be one of the first of its kind to be used to generate electricity by a Borough Council. The bespoke system of mono and dual wing cantilever solar carports was specially designed for the council staff car park as there was insufficient space to accommodate a conventional PV system on the roof of the building.

The Offshore Renewable Energy Catapult has appointed Andrew Jamieson as its chief executive officer. He joins the Catapult from his previous role as policy & innovation director of ScottishPower Renewables and will be responsible for delivering the short and long term objectives of the Catapult, including recruitment of the Catapult team.

Solar Frontier Europe has opened a branch office in Bari, Italy, 20 months after moving into its European headquarters office near Munich. Since opening the Munich office, Solar Frontier has extended its distribution networks across all major markets in Europe as well as in Israel and the African sunbelt countries. The new office in Italy will further strengthen Solar Frontier's presence in the Mediterranean countries.

BPVA launch PV loyalty card

Industry first: The BPVA has launched what is said to be the first loyalty card for the renewables sector

The British Photovoltaic Association (BPVA) has launched what is says is the only loyalty card for the renewables sector in the world.

The reward programme was conceived in response to disappointing UK PV installation figures and low customer awareness of the financial viability of solar PV.

Aimed at both businesses and domestic customers, the National Energy Card operates by giving the card owner e-points when purchasing solar systems or energy efficiency measures from partner companies. The card owner can also earn e-points if they shop online at the National Energy Card web store.

The scheme also offers a route to discounts on products and services from programme partners, insurance on PV installations, extended warranty, access to finance and receipt of member magazine 'My Energy'. Following a successful roll out for PV products, BPVA intends to cover other renewable technologies.

Members of the BPVA can apply to become a National Energy Card programme partner. The benefits of becoming a programme partner include rewarding loyal customers, communicating latest products, increased brand visibility, increased contact with customers and identification of customer behaviours and trends. Companies signing up will pay a fee of £10 per year which is paid to the Power Africa project fund.

The scheme is also backed by a fund in the region of £100m which will be open to National Energy Card holders to apply for loans of up to 100 per cent of any PV installation cost. Interest rates will be set between 6.5-8 per cent and cash lent will be secured against future payments under the Feed-in Tariff.

Waxman invests in new facility

Grand opening: Waxman Energy has opened a purpose built 40,000 sq ft office warehouse and training facility at its Yorkshire base

Specialist in the design and distribution of solar PV systems, Waxman Energy, has strengthened its position with the opening of a purpose built 40,000 sq ft office warehouse and training facility at its Yorkshire base.

The group has invested over £500,000 into the new premises and also employed five new members of staff including industry expert Roy Oxley, who heads up the specialist training academy.

The facility incorporates the Waxman Group's energy and Renewables companies and as well as a showroom displaying a vast selection of products available from the company. The Waxman Training Academy is also based from the facility and offers accredited courses in a selection of renewable technologies covering biomass, solar thermal, and air and ground source heat pumps. The academy also features a lecture style theatre and a selection of pitched roofs for practical solar PV and thermal installation tutorials.

Richard Waxman, chairman of the Waxman Group said: "The new space will accommodate the group's future growth. We have already welcomed new additions to the team, who will help us strengthen the business and move forward."

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Events

Solar Power UK 2012
2-4 October NEC, Birmingham
www.solarpowerukevents.org/

Renewables Roadshow
3 October Wembley Stadium, London
www.renewables-roadshow.co.uk/

Energy Solutions
10-11 October London Olympia
www.energysolutionsexpo.co.uk/REI/

Nextgen
10-11 October Stoneleigh Park, Warwickshire
www.nextgenexpo.co.uk

Microgen 2012
10-11 October 2012 Stoneleigh Park, Warwickshire
www.microgen.thepowerof3.co.uk

Phex: Plumbing and Heating Exhibition
10-11 October Old Trafford, Manchester
14-15 November Stamford Bridge, London
www.phexshow.co.uk/

Installer Live
14-16 October NEC, Birmingham
www.installerlive.com/installerlive/website/Home.aspx?refer=1

Oil & Renewable Energy Show
17-18 October Manchester Central
www.oilandrenewableenergyshow.co.uk

Renewable UK Annual Conference
30 October-1 November SECC, Glasgow
www.renewable-uk.com/events/annual-conference/

Homebuilding & Renovating Show
2-4 November Northern Show, HIC Harrogate
17-18 November South West Show, Somerset www.homebuildingshow.co.uk

A Profitable Future in Renewables
21 November British Museum, London
www.reiconferences.co.uk

Ecobuild 2013
5-7 March London Excel
www.ecobuild.co.uk

Plumb Center launches Green Deal Advisor course

Plumb Center has announced a new training course that will enable its trade customers to practice as Green Deal Advisors.

Plumb Center sees the involvement of heating installers as central to the success of the government's Green Deal scheme, which aims to boost the energy efficiency of the UK's domestic and commercial building stock. Plumb Center itself is working towards Green Deal Provider registration, as well as supplying approved products, training and other support to its customers.

Only authorised Green Deal Installers may install energy efficiency measures under the Green Deal finance mechanism, and Plumb Center is working with NAPIT to enable current heating installers to build on their existing skills by gaining Green Deal Installer accreditation.

However, Plumb Center believes that the best way of delivering a successful Green Deal will be for the Green Deal Installer also to act as a Green Deal Advisor – who will carry out a qualifying assessment of the property, and recommend measures to be installed. The person best placed to do this, in the opinion of Plumb Center, is the heating installer.

The new Green Deal Advisor course, specially developed by Plumb Center and its training partner Sevenoaks Energy Academy, involves both in-house training and some home study. This will give all the knowledge needed to produce an Energy Performance Certificate (EPC) and a Green Deal assessment.

There are no pre-course requirements for the standard course, which lasts seven days. However, if a person works as an electrician, level 3 domestic plumbing or heating engineer, gas engineer, MCS installer, air conditioning engineer or structural engineer, they will already have some of the knowledge and skills required.

Therefore for those engineers who are Gas Safe registered or Microgeneration Certification Scheme (MCS) certified, a shorter five day course is offered.
Plumb Center also offers a shorter Green Deal Advisor course for certified Domestic Energy Assessors.

Simon Allan, Plumb Center's director of renewables said: "We've developed this course in response to demand from our customers. They see the potential in Green Deal, and want to get their Green Deal training and other support from a company they know and trust, rather than people they've never heard of.

"The Plumb Center course is structured as a mixture of remote learning and classroom modules, to reduce the cost of gaining the Advisor qualification, and to minimise disruption to the trainee's business. It is important to remember, when comparing various courses, that the Plumb Center costs include the Green Deal Advisor Qualification and a bespoke software package to enable completion of a Green Deal assessment."

Plumb Center has already trained more than 600 people to BPEC and NICEIC-recognised qualifications in renewables technologies at its nationwide network of seven training centres. An eighth centre is soon to open in Falkirk.

Advice line: Plumb Center is offering a training course that will enable its trade customers to practice as Green Deal Advisors

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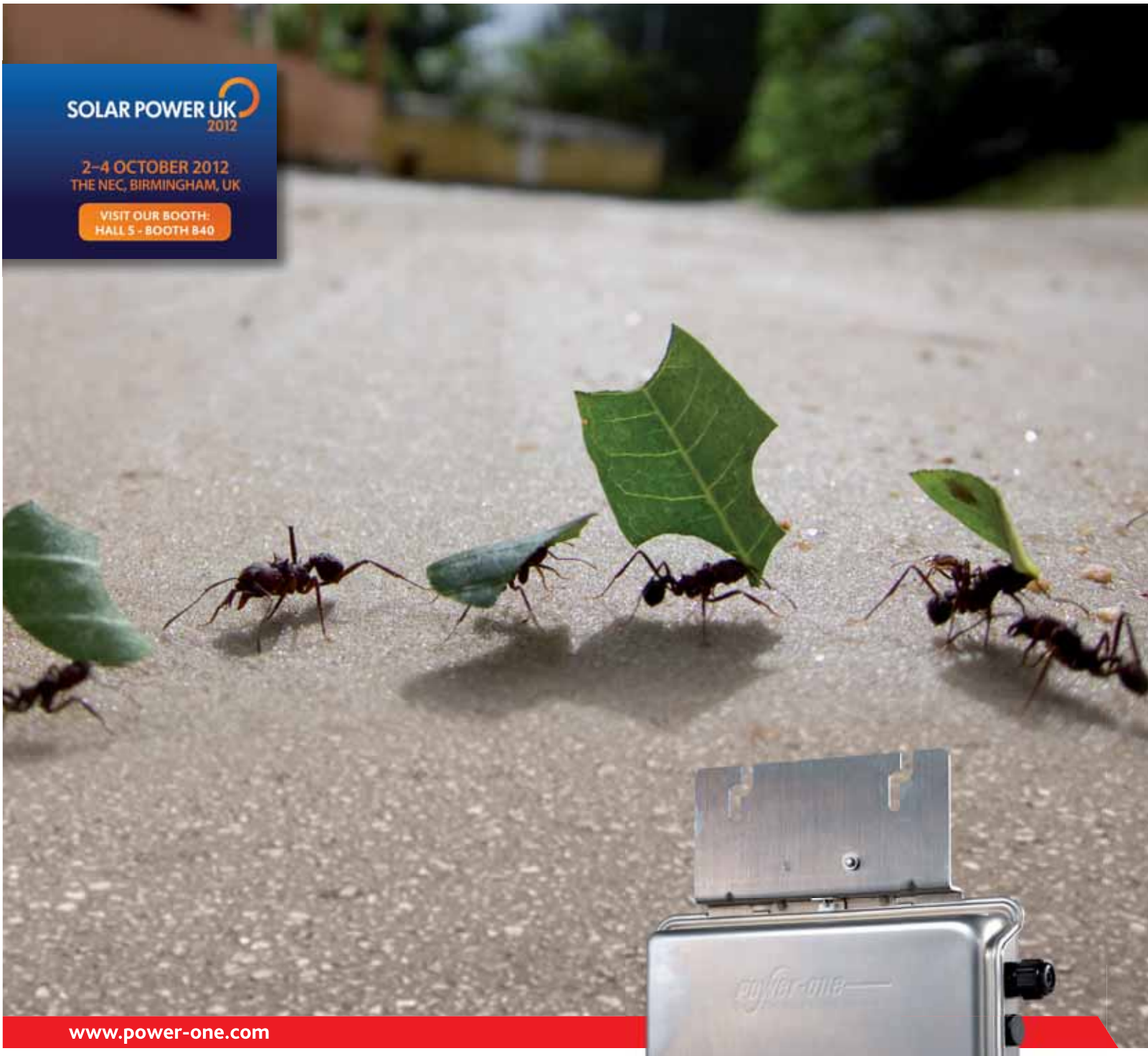

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- The VPhase unit is available from most electrical distributors and wholesalers throughout the UK.
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- **Bundling the VPhase with a solar PV installation improves the payback period for customers.**
- More technical information is available on the VPhase web site, including wiring diagrams and technical FAQ sheets.
- Free marketing support and training is available.

Solar PV + VPhase

There's a growing trend for solar PV installers to specify VPhase voltage optimisation devices, as they're not only a low cost, effective technology that can improve the overall payback period for the combined job - but they're also increasingly in demand from consumers. As an electrician is usually on site for a PV installation, the extra time and cost for adding in a VPhase is negligible.

FREE Training video

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VPhase has put together a unique training video with in-house, time-served electrician Andy Rigby and the Learning Lounge's Dave Austin. The video, at just over 22 minutes long makes learning about voltage optimisation and how to install the VPhase device easy and convenient, as you can watch it whenever, wherever and as often as you like. Alternatively, go to www.youtube.com/vphase and watch it there.

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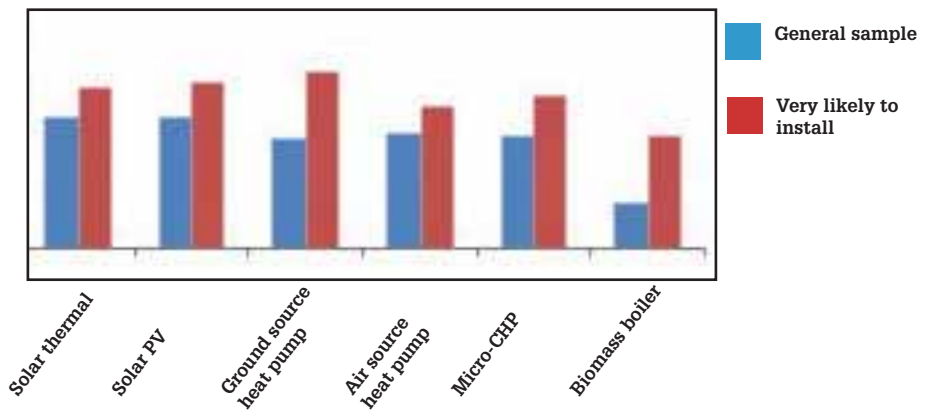
What microgeneration products do customers want?

Delta Energy & Environment's latest customer research indicates that within the next five years around 700,000 owner-occupiers in Great Britain are 'very likely' to invest in a microgeneration technology. This rapidly growing microgeneration market is an exciting opportunity for installers

This article addresses the questions: Which microgeneration technology will these customers choose? And what are key influences on customers' decision making?



About The Research

Delta Energy & Environment (Delta-ee) has partnered with leading market research agency Accent to develop the GB Microgeneration Research Service, which is used by energy companies and product suppliers and installers to help them understand customers, the future direction of the market and to develop the right customers propositions.

This article focuses on summarising selected findings from our recent on-line survey. This survey was a quantitative piece of research undertaken on-line with a representative sample of 1,000 UK homeowners and bill payers. It was undertaken in line with the requirements of the international market and social research standard ISO 20252: 2006. A selection of questions included in the survey included:

6. Please select all the technologies from the list below that you had heard of prior to completing this survey.
7. [Description of TECHNOLOGY A] How appealing is this as a technology?
13. If you were to consider installing low carbon technology, which of the factors in the list below would best represent the reasons for you doing so?
15. The typical costs for the different technologies are shown below. Please indicate whether you find this: much less than expected; less than expected; as expected; more than expected; much more than expected.
19. Can you state the influence of each of the following in your decision to install?
20. How likely are you to install low carbon technology in 1 year? 3 years? 5 years?
21. Why are you likely to do so in that timeframe?
22. What are the four key things that would need to change for you to consider installing low carbon technology?
26. How important would it be to you to receive each of the following if you were having a low carbon technology installed?

Research Findings

Unsurprisingly, all of the technologies had stronger appeal for customers who stated they were very likely to invest in the next 5 years, with their appeal increasing between 20-40 per cent on average.

Solar thermal and solar PV are the two most popular technologies with more than 50 per cent of respondents finding them 'quite appealing' or 'very appealing'.

Micro-CHP, ground source heat pumps (GSHPs) and air source heat pumps (ASHPs) all had fairly strong levels of appeal.

Biomass is the least appealing technology – only 21 per cent of respondents found it 'quite' or 'very' appealing'.

The research confirms that financial considerations remain critical in customers' decision making – lower upfront costs and greater fuel bill savings are key triggers to convert interest into sales. In contrast, carbon savings are not a primary influence on decision making.

The survey also explored the importance of aftersales support for customers when making decisions to invest. A warranty of at least 10 years is identified as the most important of nine potential after-sales features that were tested.

For a White Paper with more details of the above research please visit **www.delta-ee.com**

In the coming weeks Delta-ee and Accent will be carrying out a conjoint analysis to explore how customers' willingness to pay for different microgeneration offerings. Please contact **Stephen.Harkin@delta-ee.com** or tel 0131 625 1005 for more details.

A Profitable Future in Renewables
Business Strategy Conference

WEDNESDAY 21ST NOVEMBER
THE BRITISH MUSEUM

Brought to you by REI
Renewable ENERGY INSTALLER THE BUSINESS OF MICROGENERATION

The UK's only business focused conference for the sub 50kW renewables market

Brought to you by the industry-renowned REI magazine, a host of leading experts are positioned to present and debate on topical issues, ultimately providing you with detailed information to take away, digest and use to drive your business forward.

Why attend?

- Understand from the Policy Makers the in depth details behind FiTs, RHI and Green Deal
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- Clarity on how to take advantage of the opportunities for growth
- Insights into the key issues affecting everyone in microgeneration
- Networking with over 100 of the most senior people in the industry

Who should attend?

- Installers
- Green Deal Providers
- Policy Makers
- Manufacturers
- Wholesalers
- Investors
- Training Companies
- Professional Services

Key Speakers

Alasdair Grainger, DECC
Lead-delivery and engagement

Jeremy Leggett, Solarcentury
"Britain's most respected Green Energy Boss"

Jonathon Porritt, Forum for the Future
Visionary Green Leader

Howard Johns, Southern Solar
Chair Solar Trades Association until 2012

Paul Davies, PWC
Interim Head Green Deal Finance Company

Paul Thompson, REA
Head of Policy

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Profit share

REI's ***A Profitable Future in Renewables Business Strategy Conference,*** has attracted a lot of attention since its launch. With **Patrick Allcorn**, head of the domestic RHI team at DECC, now on board, the event offers even more incentives for those attending. The event takes place at the British Museum, London, on November 21

A range of key speakers is lined up for REI's ***A Profitable Future in Renewables Business Strategy Conference,*** the latest one being Patrick Allcorn, head of the domestic RHI team at DECC. Involved in developing the policy and public consulation for the domestic RHI, Allcorn also has responsibility for the Renewable Heat Premium Payment programme.

"This is an event like no other," said Lu Rahman, editor, Renewable Energy Installer magazine. "It is the only business-focussed conference for the sub 50kW renewables market. The inclusion of Patrick Allcorn on the programme is fantastic news for delegates. Many industry experts are placing much store on the growth the RHI will bring to the sector and to have first-hand information from such a pivotal figure at DECC, means they will be well-placed to make informed business decisions that involve the RHI."

Places at the event will be limited in order to allow genuine business networking and to provide delegates with a real opportunity to speak with their chosen business leader. "Other events may be larger but we made a conscious decision to ensure delegates have the intimacy to speak with key figures that will provide solutions for their business needs. "As we enter a key stage within the industry, assessing the opportunities afforded by the Green Deal and the RHI, it is vital that those attending receive value for money by being able to discuss their business requirements and find solutions by talking to key industry professionals. The aim of the event is to ensure delegates receive high quality advice and leave the event feeling confident they can drive their businesses forward profitably and successfully.

"The quality of confirmed speakers at the event is testament to the high regard this event is attracting within the industry," added Rahman. "There are many changes within the industry at present and this Business Strategy Conference aims to provide solutions for those looking to increase profitability and drive their businesses forward."

We look forward to seeing the leaders in the field of renewables planning for a successful future

Other key speakers include Alasdair Grainger from DECC and Solarcentury's Jeermey Leggett. Described by the Observer as "Britains' most respected green energy boss", Leggett writes and blogs for the Guardian, the Financial Times and Sublime magazine.

Howard Johns, Southern Solar and chair of Solar Trades Association will also be speaking as will Paul Davies, PWC, Paul Thompson, REA and of course Jonathan Porritt, Forum for the Future.

The renewables industry has potentially, an incredibly profitable time ahead. With the Green Deal and RHI on the horizon, there is a wealth of opportunity ahead and a chance for installers to increase the service they offer to customers. With this of course comes the opportunity to grow businesses.

"With many companies looking to diversify from one technology to another, the timing of this event could not be better placed," said Rahman. "Business face crucial decisions and need practical business advice from experts on how to attract funding, how to set up serious and long-lasting relationships and how to focus on the aspects of their business that will provide long term growth and prospects. A lot is being expected from the RHI and many installation companies are looking for clarity on how to take advantage of potential growth."

Mark Green, publisher, Renewable Energy Installer, said: "The opportunities for those renewables businesses that understand the market and are able to respond to the changing market, will be great. We look forward to seeing the leaders in the field of renewables planning for a successful future."

Tickets for A Profitable Future in Renewables Business Strategy Conference cost £450. **www.REIconferences.co.uk**

Small is beautiful: A Profitable Future in Renewables Business Strategy Conference, at the British Museum, has limited numbers to ensure delegates speak to key figures

Tepid response to November FiT cuts

As the Feed-in Tariff's quarterly degression mechanism swings into force for the first time in November, **Paul Stephen** tests the waters among installers

Based on quarterly PV installation figures recorded for the months of May, June and July, Ofgem has confirmed that a 3.5 per cent cut in payments will apply for all domestic installations registered after 1 November.

This means a reduction from 16p/kWh to 15.44p in the >4kW scale banding, and a drop to 13.99p in the >4-10kW band. The same percentage cut will also apply to tariffs for small commercial installations whilst rates will not change for large commercial systems until, at least, 01 February 2013.

Concerns remain with some installers that the industry will struggle to cope with peaks and troughs in demand generated by the degression mechanism. Some also fear that further reductions will do little to stimulate demand only three months after the last cut in August.

Sanjay Bowry, ceo, **Dulas**, said: "The frequency and severity of reductions to the Feed-in Tariff (FiT) has created real turbulence in the PV marketplace. The exaggerated peaks and troughs in demand have put real pressure on installers who have had to carefully manage their resources in line with the fluctuations. The industry has suffered as a consequence."

Nick Keighley, director, **Solarlec**, said: ''It was obvious to everyone that the August cut in the tariff was too soon after to previous one in March. The industry needed much longer for consumer confidence to be restored. Demand for PV is very low currently and a further cut in November will certainly not improve matters.'

Harry Shepherd-Cross, director, **Ardenham Energy,** added: "The immediate impact of August's Feed-in Tariff cut has been predictably disastrous. The industry is shedding participants at an alarming rate including some long established firms.

"Customers have become accustomed to prices falling so have taken the decision to wait until the last moment before each degression to commit. While this is personally rational, it imposes huge inefficiencies on the industry in having to service surges in demand then cope with surplus overhead in the post degression hangover."

It was obvious to everyone that the August cut in the tariff was too soon after the previous one in March. The industry needed much longer for consumer confidence to be restored

Other installers have taken a more optimistic view that although undesirable, further reductions to the Feed-in Tariff will occur at regular intervals and at acceptable percentage levels which will ensure that attractive financial returns remain available.

With some predictability now offered by the degression mechanism and installation costs continuing to fall, there are many who remain upbeat.

Kelvyn Skee, marketing manager, **Cleaner Air Solutions,** said: "Providing there are no other changes such as a further reduction in duration of FiT from 20 years, I don't feel the 0.5p drop will drive that much of a surge as previously seen. If you were to lose 0.5p on a 4kW

Tariff band	Digression rate	FiT rate from November 01
<4kW	3.5%	15.44p
>4-10kW	3.5%	13.99p
>10-50kW	3.5%	13.03p
>50-100kW	0.0%	11.5p
>100-150kW	0.0%	11.5p
>150-250kW	0.0%	11p
>250kW-5MW	0.0%	7.1p
Stand-alone	0.0%	7.1p

system generating 3,500 units a year, it's only £17 less."

Spitfire Wholesale director, Lee Summers, said: "At least we now have a clear path forward. Although recent times have been difficult in the industry, after a period of consolidation we should see a stronger installer base with a more quality focused approach."

Photon Energy director, Jonathan Bates, said: "The new set-up allows for smaller but more frequent reductions and is much more sensible and will, I think, bring new stability to the PV sector. "Because of the huge reduction in prices for solar PV, the financial returns are better than when the scheme was introduced back in April 2010. I expect that further tariff reductions will be accompanied by further price reductions in solar PV."

Wind of change: Dulas ceo, Sanjay Bowry says that the Feed-in Tariff degression mechanism is causing turbulence in the PV market

"Local heating and renewables installer businesses will be central to the success of Green Deal" Simon Allan, Plumb Center P23

In the know

The MCS looks at the facts installers need to know about MCS installation and the Green Deal

The government has made clear that it wants the installation of microgeneration measures under Green Deal to be carried out by MCS-certified installers. Some governance changes are required to make this happen but the intention is that those will all be completed in plenty of time before the first Green Deal installations are carried out in early 2013. However, we already know at a high level how MCS installers can opt in to installing under Green Deal as well. The recognition of MCS by Green Deal means the installer company will already be complying with the vast majority of what's needed for Green Deal. There will be a few extra requirements, and these are set out in PAS 2030 (the Green Deal installer standard) which you can obtain directly from BSI or, in many cases, via your Certification Body. Once you have been assessed against any such additional criteria, you will need to sign up to the Green Deal Code of Practice: **http://www.decc.gov.uk/assets/decc/11/tackling-climate-change/green-deal/5680-draft-green-deal-code-of-practice-.pdf**

Finally, you will need to sign a sub-licence authorising you to use the Green Deal Mark in your advertising and promotional materials. We believe that most current MCS Certification Bodies intend signing up to offer this service, so the chances are you'll be able to do all this without ever needing to change Certification Body.

For more information you should contact your Certification Body. If you wish to be certified to install more Green Deal measures than just microgeneration, you can find a list of Certification Bodies who can help you at: **www.greendealorb.co.uk**

First choice

Matt Cody, **VPhase** stresses the need to specify the right voltage optimisation device.

Once you or your customer has decided on specifying a voltage optimisation unit to work alongside a solar PV installation, it's important to make sure you choose the right one. The G83/1 legislation means that the solar inverter must be able to 'see' mains voltage so the connection to the PV system must not be optimised by any installed voltage optimisation unit; it's only mains supply voltage to the home that will be optimised.

The first criteria that should be considered is maximising the savings/minimising the losses from installing the voltage optimisation unit. All voltage optimisers have a theoretical maximum saving that can be achieved, which is reduced by any losses exhibited in the device. Maximising the savings can be achieved by choosing a low cost device.

The second factor is to not over-specify. Selecting products that are rated in excess of what is needed, costs are higher and payback extended. The UK average base electricity load is just 700 watts.

The final primary aspect needing consideration is the key features of the product. Installation may be slightly quicker with tails in/out, segregating the resistive heating circuits will improve the efficiency of the voltage optimisation units, increasing savings and reducing payback periods. The patented technology used in the VPhase voltage optimisation device means units are the smallest and lowest cost voltage optimisation devices available. They are configured to work best with segregated consumer units and offer savings of up to 12 per cent off annual electricity bills.

Pollard's Patter

THROUGH THE EYES, AND GLASSES, OF **TIM POLLARD** HEAD OF SUSTAINABILITY, PLUMB CENTER

I have spent the last few weeks travelling the country talking to installers about the Green Deal and the Plumb Center can do to help businesses take advantage of any ensuing opportunities. The first thing I discovered was that understanding around the Green Deal varies significantly and if that is the case in our industry then we can only imagine that the general public have zero understanding or awareness of the scheme.

At this late stage, there is debate about the very name of the programme as 'green' issues have been tainted with misconceptions about having to tolerate 'worse' products and conditions.

Most people would assume a Green Deal for buildings would encourage the installation of more efficient technologies like renewables, but they would be wrong. Most renewables will qualify for little or no financing through the scheme if installed on their own. The position may be improved if a package of measures including insulation and draughtproofing is included, but not much.

If the government wants us to consider energy efficiency urgently and replace inefficient appliances with modern products they must give out the right messages. This makes the publication of the domestic RHI consultation paper even more important. We have waited a long time for the details of the programme and many markets and businesses have suffered as a result. It had better be good – for all our sakes.

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News and views

Steve Pester, BRE, discusses latest PV-related issues and news

With the recent large price drops of PV modules hitting profit margins for manufacturers, distributors and installers, the small scale PV sector is once again in challenging times. Megawatt scale systems are currently supported by Renewable Obligation Certificates (ROCs), but these are now under review. Whilst the price reductions may be good news for end users, the supply chain has to turn over approximately twice as much business to make the same level of profit compared with a couple of years ago - a difficult (and for some, impossible) task in a regime of reducing Feed-in Tariffs.

Without wishing to preach to the converted, I think it is worth remembering the advantages of PV over other forms of energy generation; it is deployable in almost any location, avoids transmission losses, generates power without emissions of CO2 or other harmful waste products or pollutants, does not deplete finite natural resources, is silent in operation, has the potential to improve security of supply, is recyclable at end-of-life and the fuel is free and abundant. Is there another energy source that can match that profile? With costs reducing, the widespread deployment of PV will become a reality sometime soon - exactly when that will be depends on the will and ambition of governments.

Some nuggets of good news:

It was reported recently that Australia has reached grid parity (I assume this applies to the sunnier parts of the continent) – a great step forward and a good market to watch to see how things now develop.

The new MCS PV standard for installers (MIS 3002 issue 3) and its associated installer guide will soon be released (no, this time, I think it really will happen). The long gestation period - over two years - reflects the fact that difficult subjects have been tackled and resolved within the working group. The standard relies heavily upon an updated version of the installer's guide, which has new sections on calculation methodologies for wind loading and energy yield, earthing and RCD requirements, amongst others. This new guide will make a serious contribution to improving the quality and safety of installations in the UK – good news for the whole industry.

We at BRE are helping to connect the PV industry with mainstream architecture by running our annual Building-Integrated PV conference at the Royal Institute of British Architects, London on 17 October – come and find out about leading edge PV-integrated building components! Details at: **www.bre.co.uk/bipv3.**

Q&A

Paul Bradbury

Libra Energy UK

REI: What have you got planned for the rest of the year?

PB: An online webshop will soon be unveiled giving customers the ability to order direct and see live stockholding. Solar Power UK in October will see the announcement of major new supplier deals further enhancing our product portfolio. Also a Libra Roadshow is planned offering training and advice to customers.

REI: What do you see as the growth areas in renewables?

PB: Commercial 20+kW PV installations are now the most enquired about but domestic kits are still popular despite the Feed-in Tariff drop and with the Green Deal imminent we envisage a resurgence of interest. Voltage optimisation and the new generation hybrid inverters along with increasingly efficient panels are positive steps to deliver maximum savings and results for consumers.

REI: How is your company cutting its carbon footprint?

PB: Wherever possible we recycle and keep energy use to a minimum. Low voltage LED lighting is used throughout the office, we also car share and use electronic communications for invoicing and mailing.

Paul Bradbury is UK general manager at Libra Energy

TECH TALKING

Making the leap

Lee Summers, Spitfire Wholesale, looks at issues for installers looking move into different technologies

With the solar PV market in a state of limbo in the UK many installers are looking to diversify their domestic offering. The much vaunted domestic RHI may well be the opportunity to achieve this. There remain a few barriers to your success. For one, the domestic RHI has already been delayed, with an announcement on how the final version may look in spring of 2013. Secondly, PV is a relatively simple technology to install well, needing only a reasonable amount of up-skilling for the installer. The design of solar thermal, biomass and heat pump systems are considerably more complex, requiring a detailed assessment of the on site heating loads as well as a comprehensive understanding of how the constituent parts of a system combine to meet said load. In comparison to PV, efficiency is a prime concern. Not accounting correctly for losses in your system will have a major impact on whether the installed technology has a positive effect on the fuel bills of any household. Correct sizing of the emitters is another common mistake leading to increased load on the auxiliary heating system with the net effect being increased bills for the home owner. This will lead to complaints, remedial works and potential damage to the industry's reputation as a result. The response to these pressures should be to find appropriate courses and train the appropriate people in your organisation.

The Centre for Alternative Technology cover most available technologies in great depth on its residential courses. The second course of action should be to find a reputable supplier who, has your success in mind. Spitfire Wholesale can provide a full range of products from the world's leading manufacturers. This range is backed up by full technical support both pre and post-sales.

Working smarter

SMA's **Henry Dziuba** discusses how the development of energy management systems can help UK homeowners in the pursuit of grid parity

As we get closer to grid parity, PV modules and inverter manufacturers are investing in technologically advanced products that help homeowners use energy in a smarter way.

Photovoltaic systems alone produce several billion kilowatt hours of carbon-neutral electricity every year, yet the grid parity debate still raises additional questions: How does the industry help consumers utilise more of the power they generate? How can solar power best be used to make the electricity grid more reliable? What is the most efficient and profitable way to use solar power?

A key topic which is gaining importance is self-consumption. Any reasonable increase in the rate of self-consumption requires the use of intelligent energy management systems than can optimise power generation and consumption in an easy and automated way – a smart home.

Networked home appliances and the development of storage technologies that offer higher performance at a lower cost are arriving offering significant financial benefits, security of supply and improved energy efficiency.

A greater focus on optimising solar energy use has led to higher system requirements. Although high efficiency inverters alone remain a key part of any PV system, they now need to be integrated into an intelligent renewable power supply system. The first challenge is to offer a comprehensive system solution for home energy management. More specifically, an intelligent and intuitive energy manager with local power generation forecasts and flexible storage systems than can easily be added to existing PV systems.

Solar PV, despite the recent bureaucracy, is predicted to be an even more desirable investment than ever before with 2013 being an exciting year for PV advancements. Introducing these intelligent energy management systems to the UK market plus a bit of vital educating for homeowners along the way, we can all make better use of solar power.

Perfect partners: Henry Dziuba, SMA, looks at the role of energy management systems and grid parity

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James Robinson, Senior Estimator, Steadfast Roofing

"We needed to satisfy the sustainable element of the Building Regulations and installing solar PV technology from Redland was the best way to do this. What impressed me most is how aesthetically pleasing the completed roofs are … from street level you hardly notice them."
Richard Lotherington, Director, Chase Green Developments

"With the strong wind and rain in Scotland, we recognised the importance of the fixings and installation process in ensuring the long-term security and weathertightness of our roof … incredibly easy to install and the whole job was completed within a week."
Steve Scott, MD, Forster Energy

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Nick Turnbull, Director of Eco Solutions, Kingsley Group

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Talking Ten to the Dozen

Leading renewable experts reveal their opinions

What excites you most about Green Deal?

Simon Allen, **Plumb Center**

"Local heating and renewables installer businesses will be central to the success of Green Deal. Green Deal offers great opportunities for installers - especially those that take advantage of the available support from the industry in terms of training, software, product and finance, and become accredited Green Deal Advisors."

Jason Hobbins, **EnergyMyWay**

"The Green Deal has the potential to bring energy efficiency into the mainstream at last. If the government, the media and the industry work together to get this right for the homeowner, it could mean that being energy efficient is no longer a luxury, but an essential and accessible way of reducing the cost of living."

Martin Wadsworth, **DiscreteHeat**

"The Green Deal will throw a spotlight on the importance of the emitter in the whole home heating solution. Having the most energy efficient or most competitive heat pump will mean nothing if you can't deliver it into the room in a practical, retrofittable low temperature radiant system. Once that spotlight becomes a searchlight, the brightest companies will find ThermaSkirt."

David Lowen, **Power-One**

"The Green Deal is a considerable step forward when it comes to making properties a lot more energy efficient. But it is not just homeowners who will benefit from it – the Green Deal has the potential to provide a boost to the whole renewable energy industry."

Tony O'Connor, **British Eco**

"We are confident that the Green Deal will be a success and are excited to open doors to many more homeowners, tenants and businesses enabling them to install energy efficiency measures whilst cutting their carbon emissions and energy bills."

Baiju Devani, **RES**

"The Green Deal offers a source of funding to businesses to undertake energy efficiency and on-site renewable energy measures. For many businesses, especially in a challenging economic environment, lack of funding can be a barrier to making improvements to business premises, and so it is excellent news that the Green Deal is attempting to address this."

Andy Wynter, **Green Deal Consulting**

"For me, the most exciting prospects are the benefits to be seen by the customer, including those in fuel poverty. If we get the Green Deal and ECO Assessment process right, the scheme will revolutionise how we implement energy efficiency, tailoring it exclusively to the individual and their property's requirements."

Mike Billington, **Tundra Wood Heating Systems**

"The Green Deal presents a unique opportunity to reap the benefits of wood heating systems. With significantly reduced fuel costs, the Green Deal combined with the Renewable Heat Incentive will allow people to benefit from wood heat and provide significant income and lower carbon emissions for years to come."

Bruce Cross, **GB-Sol**

"The Green Deal will pump much needed funding into the PV industry after a couple of years of negative impact caused by the significant reduction in the Feed-in Tariff. I am optimistic that the Green Deal policy does in fact show that PV still provides as attractive a return as was available when 43.3p/kWh was the domestic norm."

Andy Gribble, **Plumbase**

"As a Green Deal Provider, Plumbase has a vital role to play, supporting installers and product manufacturers across the Green Deal product range. We believe the Green Deal is a huge opportunity and we will be working hard to help both our trade customers and consumers understand how they can benefit."

If you would like to see your company logo here, call Lynn Amey 01565 653283

Hot problems?

David Parsons, Kiwa Gastec, looks at heat metering – a major stumbling block to RHI applicants

Offering 20 years' worth of financial support to owners with eligible installations, many are looking to the Renewable Heat Incentive (RHI) to underpin growth in renewable technologies. The government, however, can be viewed as presenting conflicting messages on RHI. Reducing tariffs, and providing a standby budget, are presumably intended to avoid a repeat of the embarrassment with the Feed-in-Tariff (FiTs), when entrepreneurs led a higher than expected take-up. Conversely, however, Ofgem reports a bottle-neck in RHI accreditations due to the vast majority of first time applications being rejected due to significant flaws.

Apart from inconsistent, incomplete and confusing supporting information, Ofgem suggests that proposed heat metering schemes have been a major stumbling block for applicants. Clearly part of this is government sensitivity to potential RHI abuse. Could ministers be losing sleep over the possibility of investigative journalists chasing an "Our taxes going to fund waste of renewable heat" story?

In my role as head of training and assessment at Kiwa GASTEC at CRE (KGC), what we are lacking is a completely independent advisor for all parties involved in the RHI. Having been involved in reporting to government on the technical practicalities of RHI roll out, as well as providing independent assessment reports to successful RHI applicants with complex sites, we have broad experience and no conflict of interest issues.

Instead of a formal consultancy approach, RHI applications should be more D.I.Y. KGC has announced a half-day workshop "Heat Metering for the RHI – Get it Right First Time" to provide essential best practice guidance on the selection of the most appropriate meter, the correct location of heat meters, data collection and handling techniques and site specific considerations.

Hot topic: David Parson, Kiwa Gastec looks at heat metering

Two minutes with . . .

Who are you?
Harry Shepherd-Cross, co-founder and director of Ardenham Energy.

What do you do?
I look after the strategic side of the business particularly concerning the best ways for Ardenham to continue to thrive in what is a challenging and extremely dynamic environment.

Where are you?
Our head office is in Aylesbury. We also have regional offices in Guildford, Wellington, Cambridge and Wakefield.

How's business at the moment?
Business in the last year in the PV market has been extraordinarily volatile but we are getting used to this now and are busy building up our order book and repositioning ourselves in the new multi-technology market.

How could it be better?
The government should change its stance and announce the much delayed domestic RHI and ROC bandings for large solar. Investment and business planning with such huge uncertainties is very difficult.

Who do you admire in renewables?
Angus Macdonald of Solar Power Generation Ltd who managed to develop a solar farm on his own land before the degressions cut kicked in after the 2011 fast track review. I confidently told him then that he had no chance of getting it registered within the timescale. It shows that he who hesitates is lost.

What's the best business advice you have received?
I began my career as a graduate trainee with Persimmon PLC under the tutelage of chairman Duncan Davidson. He gave me extremely valuable advice such as injecting a sense of urgency into the business. If something needs to be done and can be done today, do it today.

How are you going green?
We have already installed an air source heat pump and low energy lighting in our head office. We are now installing a 50kWp PV array which will provide all of our power requirements and run the air source heat pump. At home, I have a 6kW wind turbine, a PV array and drive a Toyota Prius with a built in Kyocera PV panel on the roof.

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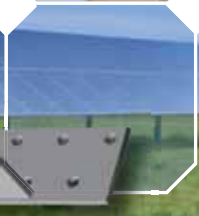

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The learning zone

Following a steady increase over the years in higher education provision for renewable energy practitioners, **Paul Stephen** visited the Centre for Alternative Technology (CAT) in Wales to find out why its postgraduate degree courses stand out from the crowd

With the enforcement of Green Deal due this month and the roll out of the Renewable Heat Incentive (RHI) to domestic properties scheduled for some time next year, the demand for skilled specifiers has never been stronger. After all, the optimum benefits of these technologies can only be achieved if properly installed.

CAT not only offers new entrants and existing professionals looking to diversify a route into this market via its MSc in Renewable Energy and the Built Environment, but also the opportunity to share in its vision and ethos.

"The reason we started this course in 2008 is because we thought there were a large number of people moving into this field and we wanted them to really understand and specify appropriate systems," said Joan Randle, CAT's courses director and head of quality and support.

"We want the people who leave here to understand the technologies and put them in place because they are appropriate and not just because there's a building regulation or something like that."

This year's intake of students will study in a unique way at the Machynlleth-based centre by travelling to the rural site once a month to spend an intensive residential week of both theoretical and practical learning. Whilst being able to continue earning away from the course, Randle says the real attraction to those on the course is the captivating learning environment.

"It is really crucial to learn in this environment and that's what the students appreciate," she said. "Learning about things in a place which embodies them makes a big difference. They can see that it works whilst being in a beautiful building which has light, has electricity, is heated and is a comfortable place to be."

Learn then earn: Students spend one week a month at CAT of intensive theoretical and practical learning

CAT has undergone significant expansion in recent years capped off with the opening of the Wales Institute for Sustainable Education (WISE) in June 2010. This award-winning building was constructed using sustainable materials and utilises multiple sources of renewable energy.

She added: "We use a holistic approach which looks at everything here – the building, its environmental impact, heat savings, the materials we've used, sanitation, the organic gardens plus the vegetarian food they eat in the restaurant. You wouldn't get that in a normal university environment. When they come and hand in their final thesis we do get students saying 'thank you very much that was a life changing experience'. It's to do with the place and the course and mixing with each other for 24 hours a day."

Students can choose to take 120 credits from seven 30 credit modules which cover all renewable energy technologies, plus a thesis to gain an MSc accredited by the University of East London.

Course fees start from £7,500 for UK and EU students which are normally covered by company sponsorship, career development loans or self funding. Kit Jones, CAT's media officer, said this represents a great investment in terms of professional development and making valuable industry contacts.

"Partly you're buying the teaching and the experience but what you're also getting is networks," said Jones. "A lot of the students here have their own projects as do members of staff so the course here is embedded in the industry. Not only does it give you the skills you require but also access to all sorts of people who are doing interesting things which you can plug into. What going into a renewables career offers, and this is what students say, is something that's good for them financially but also they get to do something that they feel is worthwhile."

Sign of the times

Ploughcroft Renewable Training has announced that its wind turbine installation course is now available

All the rage: Ploughcroft's electric vehicle charging installation course is now more popular than PV as installers look to diversify

The Yorkshire-based company has added the wind turbine course to its existing portfolio of courses which includes solar PV for roofers, solar PV for electricians, heat pump training and, its newest offering, electrical vehicle charging.

According to Ploughcroft, the need for training has never been greater with companies within the renewable sector, and especially those that rely on PV as their main source of income, now needing to diversify into other technologies.

Babak Daemi, Ploughcroft's marketing manager, added: "We are finding a real mix in enquires for courses since the infamous Feed-in Tariff cuts. Before the reductions PV related courses were by far the most popular. However, now companies want to improve their service portfolios through diversification. The most popular course now is the electrical vehicle charging course which has really taken off."

Ploughcroft also offers a range of courses that will help installers get ready for Green Deal which is set to act as the main driving force for all consumers looking to improve the efficiency of their homes.

Doubling up

Plumbing, heating and renewables distributor **Plumb Center** believes that the best way of delivering a successful Green Deal will be for the Green Deal Advisor and Installer to be the same person

Fine print: Plumb Center's new training course will enable customers to produce EPCs and Green Deal Assessments

Plumb Center has announced a new training course that will enable its trade customers to qualify as Green Deal Advisors. Developed with its training partner Sevenoaks Energy Academy, the course involves both in-house training and some home study. This will give all the knowledge needed to produce an Energy Performance Certificate (EPC) and a Green Deal assessment.

There are no pre-course requirements for the standard seven days course. However, for engineers who are Gas Safe registered or Microgeneration Certification Scheme (MCS) certified, a shorter five day course is offered. The course costs include the Green Deal Advisor Qualification and a bespoke software package to enable completion of a Green Deal assessment.

Plumb Center has already trained more than 600 people to BPEC and NICEIC-recognised qualifications in renewables technologies at its nationwide network of seven training centres. An eighth centre is soon to open in Falkirk.

Fact from fiction

BRE will be holding a training session this month to re-evaluate the architectural role of solar PV following successive reductions in the Feed-in Tariff.

It says that now building owners, installers and operators are no longer entirely focussed on profit, there is now room for architects to reflect on the advantages of PV as a building integrated product which include: enhanced building appearance, thermal insulation, roof material replacement, passive ventilation and electricity generation.

The event, which will be held on Wednesday 17 October, at RIBA, London, promises to bring together architects, suppliers and BIPV experts in order to stimulate debate.

Steve Pester, BRE's principal consultant, said: "We want to share with you our excitement about good-looking, greener buildings so come and explore the possibilities, talk with the experts and be part of the revolution."

Up skill with BPEC

Now working with over 375 approved FE colleges and private training centres, BPEC provides a range of renewable technology courses required by the modern installer. This includes solar thermal, solar PV, awareness of environmental technology systems, heat pumps, rainwater harvesting, woody biomass, underfloor heating, energy efficiency and domestic ventilation systems.

Centre point: BPEC works with over 375 FE Colleges and training centres

All courses are accepted by the various MCS certification bodies as evidence of training with BPEC solar thermal, BPEC solar PV and BPEC heat pumps courses now mapped against the National Occupational Standards and the QCF.

As an awarding body BPEC is also developing a Diploma in Green Deal advice and a solid fuel qualification.

Twice as good

Tritec recently completed two days of practical and theoretical training for installers. The well-attended training sessions were designed to give installers an in-depth introduction on two of Tritec's PV products: Tri-Ka, a hand-held characteristic curve monitoring device, and battery storage system Tri-Cell.

Product manager, Ralph Schultz, from Tritec Germany, provided practical tuition on the technology available to installers. According to Tritec, the two training sessions were well-received, provoking lively discussion and positive feedback all round.

The main source of interest at the training sessions was the newly-launched battery storage device, Tri-Cell, which allows the clean energy generated through solar PV panels to be stored and used later. Tritec says the combination of an intelligent energy management system, modular inverters and battery technology mean that solar PV systems can work at maximum efficiency at all times.

Gripping news:: Installers received training on Tritec's handheld curve monitoring device the Tri-Ka

Attendees were also given hands-on training on how to get the most out of Tri-Ka, a hand-held characteristic curve monitoring device which fits into the palm of your hand. Using the LCD colour touchscreen, installers can measure the actual output of a photovoltaic system and compare it to the expected output under Standard Test Conditions.

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Management skills

Bob Morris, md, Apollo Solar Electric takes a look at domestic microgeneration energy management and how installing the right system can increase the overall benefit from income and energy savings by 20 per cent or more

PV system owners are becoming increasingly aware that their systems generate the most energy at a time when household demand is typically at its least, ie. during the day when the sun is shining and the occupants are out at work. This results in surplus energy being exported to the grid. With a 4KW PV array if all the energy generated were to be used in the home it could be worth an additional £225 per year.

PV owners are looking at the value of the energy they are exporting and changing habits to use more energy when production is at its highest.

While this is generally the right thing to do, the problem with most solar PV installations is knowing exactly how much power is being generated, used and exported at any given moment in order to know when is the best time to use power. To help solve this problem there are a number of products available which give the householder much more visibility of system performance and if there is surplus energy which can be used.

Using as much as possible of the energy being generated sounds simple enough but it's more difficult in practice than many people imagine. Most appliances do not present a static load, their power requirement constantly varies as heaters, motors and pumps cut in and out. Add to this the fact that the energy generated by the PV array is constantly varying, and it can be seen that even with a careful eye on generation and the use of household appliances it is almost impossible to closely match supply with demand.

The only practical way to recover as many of those valuable export units as possible is by using an active energy management system. Such a system will accurately monitor microgeneration energy production together with household energy demand and then ensure that any excess energy that would have been exported is put to some useful purpose or stored for later use. Since every home requires hot water, and hot water stores energy, it makes a lot of sense to use the surplus energy to produce hot water. An active energy management system will capture surplus energy as it is generated which then stays stored in the form of hot water until we are ready to use it.

Little gem: According to Bob Morris, below, the Apollo GEM system is an example of a true variable power energy management system

When selecting such a system it is important to choose a product using effective monitoring and control techniques. Systems which simply turn an immersion heater on or off will only save a few per cent of the exported units, whilst systems which use phase angle control to vary the power in an immersion element will actually be importing energy much of the time for water heating.

In order to ensure that the maximum of surplus power is used whilst ensuring that no power is ever imported for water heating a true variable power system must be used. The Apollo GEM system is an example of such a true variable power energy management system.

Around half of the energy generated by solar PV systems is exported to the grid; this is energy which is could be worth £225 pa at today's prices. True variable energy management systems can be retrofitted to existing solar PV installations or provided with new installs. With the lower feed-in tariffs now on offer, the additional energy and cost savings obtained from installing such a system are significant and could boost the overall return from a 4KW PV system by over 20 per cent.

Taking the test

James Page, head of engineering, Joju Solar, tested voltage optimisation technology in his own home and says he found it may not always be what it seems

The domestic microgeneration market is seeing an increased interest in voltage optimisation (VO) technology. This is either being promoted by voltage optimisation companies, or increasingly as an additional offering by solar PV companies. Proponents of the technology claim high levels of energy and monetary savings. But do their claims always stack up?

To find out, I've carried out some technical testing of VO in my own home, with surprising results…

First, the technical bit: The laws of physics dictate that adding solar PV to your house will always increase the mains voltage slightly. As the house is taking less current the voltage drop in the cable from the street is reduced. If you are generating more electricity than you use, the voltage drop is reversed, and the house voltage will then be higher than your neighbours' – allowing you to export electricity.

The difference won't usually be more than a volt or two but it's of great interest to the electricity network operators, and one of the reasons installers have to notify them of solar installations. The operator is obliged to keep the voltage below 253V so too much solar means they have to turn the volts down at the substation. And if the grid voltage goes over a prescribed value (usually 253V or 264V), your inverter will turn your PV system off.

Perhaps not surprisingly there has been interest among solar customers in voltage optimisation. The claim is that by reducing the mains voltage (usually to 220V) there will be significant cuts in power consumption from electricity loads, and therefore reduced bills. But are they all they cracked up to be?

Trials have shown wide variations in savings – in some cases none at all – hardly surprising as electricity consumption varies day to day in an average house. So when our customers started to ask about the technology it was time for me to reach for the screwdriver and test some real appliances in my house.

Different electrical appliances respond in different ways to reduced voltage, which is one reason why estimating the savings is not easy. Incandescent (filament) lighting will clearly use less energy if the voltage is lowered, but the lights will be less bright. They will last longer, but you may then be tempted to swap some lamps for a higher wattage. A better way to save energy would be to change to LEDs, which are much more efficient and last longer. According to the Carbon Trust there will be no savings by reducing the voltage for LEDs, and in any case the energy used is very small to begin with.

Devices used for heating (cookers and kettles etc) will not use less energy with a lower voltage since the element will simply be on for longer to achieve the same heating effect. Flat screen TVs use a lot less energy than old TVs but they can still be a significant draw on energy so I tested our LG flat screen TV. The consumption was 54W at both 240V and 220V. I then tried the Dell PC screen. Again there was no significant change in power consumed (25W).

The biggest savings are claimed to be on appliances with motors, so I connected our Siemens A rated freezer (old, but not untypically ancient) to an accurate electricity meter. Sure enough, the compressor motor – when running – did take less power at the lower voltage (75W at 220V and 83W at 240V) but since the motor was running for longer periods it was necessary to measure the average consumption over several days (and measure the ambient temperature.) The average consumption at 220V was 14.5W, and at 240V it was 14.7W – less than 2 per cent higher, and probably not significant.

Devices used for heating (cookers and kettles etc) will not use less energy with a lower voltage since the element will simply be on for longer to acheive the same heating effect

Testing testing: James Page, Joju Solar, looks at the claims surrounding voltage optimisation technology after testing it in his own home

Of course these tests only indicate that voltage optimisation won't help save energy on these particular appliances. Voltage optimisation certainly makes sense on some commercial properties, where a detailed analysis can be made. However, we would urge residential customers to be wary of voltage optimisation technology sold purely on the basis of energy saving in appliances. From our initial studies, the savings do not arise for most residential end-uses, and are minimal where they do occur.

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Renewable Solutions UK Ltd.

Commercial Success -

Renewable Solutions extend their brand with the launch of a dedicated Commercial Division

Steve Clayton
Senior business development manager

Regular REI readers will be familiar with Renewable Solutions UK Ltd, the north west based multi-accredited installer and system designer.

The company has established itself over the last five years as one of the country's renewable energy success stories; success that has allowed country-wide expansion, a range of unique product developments and a move to a purpose-built 10,000sq. ft. headquarters building on the Wirral.

"The company has enjoyed huge success in the domestic and farming sectors but was finding itself passing by regular commercial opportunities due to a lack of sector- experienced staff," comments Steve Clayton, senior business development manager for the company. "In many cases the company had been recommended to commercial clients due to its general industry experience, but in most instances the existing workload simply prevented the company from committing to the projects".

"We realised that we were missing out on a great opportunity" says Lee Stewart, technical director of the company "And set about recruiting a 'dream team' to head up a dedicated commercial division".

The team includes:
Steve Clayton, initially from the Mark Group, who brings a wealth of experience in the sector.

Mark Povall B.Eng(Hons), who has spent the last four years in the industry, in large scale electro-mechanical system design. Dan Silcock, who has spent six years in the industry, initially as a technologies tutor/assessor and later as a commercial contracts manager overseeing numerous prestigious renewables contracts including the BRE headquarters in Watford.

at The Renewables Event, Birmingham NEC

The division is currently working on PV projects with a combined size of 2.4mW, and is at design stage on large-scale biomass projects totalling 1.3mW.

"We have achieved ISO9001 status and have been presented with the Gold CSCS Award, together with Investors in People," says Steve Clayton.
"In our opinion, these are must-have accreditations to operate successfully in this sector". The next 12 months will see us grow as a division with the potential to challenge the turnover of the company's domestic operation.
We intend to be present at the major forthcoming renewables events, following numerous leads that were made at the years 'Renewables Event' at the Birmingham NEC".

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Mark Povall
Business development manager

Dan Silcock
Commercial systems designer

Lee Stewart
Technical director

Hot prospects

Following reductions to the Feed-in Tariff, **Julie McLean**, head of marketing at Plumb Center, asks whether solar PV technology is still a worthwhile investment

For the last year or so the micro renewable energy scene has been dominated by the rapid rise of solar photovoltaic (PV). Up to December 2010, the UK had installed about 45MW of PV. 2011 saw more than 750MW installed, and in 2012 we have passed the 1GW installed milestone in the UK.

In August Feed-in Tariff (FiT) levels were reduced. There has been much negativity surrounding this issue, with gloomy forecasts the norm. But while payment levels are indeed lower, with the FiT for below 4kw units now standing at 16p/kWh, this should not come as a surprise. Degression – or staged decrease - of support over time was always envisaged, as take-up grew and the capital cost of PV equipment fell.

In reality, solar PV would appear still to be a viable financial option for many business and domestic customers, though this message is currently falling on deaf ears

The common perception following the FiT reduction is that the golden era of the Feed-in Tariff is now over, and those who have not yet installed solar PV on their roofs have missed the boat. But is this really the case? The reality is more complicated, with more competitive installation and equipment costs redressing the balance, producing similar overall yields. And this at a time when alternative investments offering good returns at modest risk are thin on the ground. In the current market, even a modest return from PV would trump what you would earn by leaving cash in a bank account.

The cost of solar panels is now half what it was, which means that customers can still benefit from acceptable returns on their investment. However, focusing on short-term payments from government incentives is rather to miss the point. UK energy bills have increased by an average of 11 per cent per annum since 2004, a trend that shows no sign of reversing. So insulating yourself against the impact of future electricity price rises by generating your own power seems a sensible move, irrespective of FiT calculations. The economics of such technologies depends to a great extent on individual usage patterns, and some users will benefit more than others. For example, Plumb Center recently supplied large PV installation to a caravan park in Scotland, a business that has a relatively high demand for electricity during the day.

So in reality, solar PV would appear still to be a viable financial option for many business and domestic customers, though this message is currently falling on deaf ears.

Green Deal and PV

The government claims that in the long term the Green Deal could create up to 250,000 new jobs and lead to £7bn per year in new investment from the private sector. The goal of the Green Deal is to improve the energy efficiency of more than 14m UK households, making the UK the European leader in reducing greenhouse emissions.

All positive stuff, but what does it mean for the future prospects of solar PV? The arrival of Green Deal will necessitate a different approach to selling PV, as Green Deal plan calculations will disregard FiT payments, shifting the spotlight onto the many other benefits of solar power. Perhaps installers should talk to their residential and business customers about looking at a mix of renewable energy solutions, tailored to their energy usage and needs, rather than focusing on quick wins from government subsidies.

Looking ahead: Julie McLean, Plumb Center, discusses the prospects for solar PV

A recent government (DECC) survey of more than 2,000 individuals has indicated that while renewable energy generation has wide public support, there is a clear lack of knowledge about what actions individuals can take themselves. Solar was the technology most favoured by respondents, with 83 per cent backing it, followed by off-shore wind (76 per cent) and wave and tidal (75 per cent). Not such good news was the the low level of awareness and interest in installing low carbon heat measures, such as heat pumps, in individuals own homes.

It appears that people appreciate the benefits of solar PV, certainly more so than other renewable technologies. The problem is that they've been led to believe that it's no longer an economic proposition for them to install. The challenge for installers over the coming months is to communicate to the general public the enduring positive proposition of solar PV.

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Protection order

Andy O'Leary, Sibert Solar, takes a look at surge protective devices (SPDs) for solar PV

AC and DC lightning/surge protection is a topic that is gaining more and more attention within the solar PV installation sector and is often an area that causes a certain degree of confusion. Proper and adequate protection, assessed at the initial design stages, can mean the difference between replacing multiple inverters or not in the future.

Protection of the DC circuits, the inverter and downstream AC circuits is imperative in the event of a direct and/or induced surge, regardless of whether the PV array is bonded or not. Several different scenarios exist regarding the level of protection required dependent on the nature of the existing electrical grid supply and the presence (or not) of any existing lightning protection system (LPS).

Recent changes to the BS7671 wiring regulations help to clarify the requirements for an SPD installation on the AC circuits but the DC circuits need careful consideration too.

Relating to the DC-side, there are typically three different types of installation, the most common being a non-grounded or double-insulated system. Adding a surge device here will mean fitting Type-2 SPDs (surge protection only) at the inverter to protect against indirect lightning strikes/surges.

The next type of installation would be one where a lightning protection system (LPS) is already fitted to the roof. This installation is mindful of the need for adequate separation distances from the copper tapes of the LPS and the frame of the solar PV array. In this case the DC circuits are protected with Type-2 SPDs but as there is an LPS on the roof, the AC circuit needs to be protected by a Type-1 SPD (combined lightning and surge protection).

Lastly, the third typical installation type is where there is already a pre-fitted LPS on the roof but the modules are fitted without adequate consideration of the required separation distance from the LPS so flash-over to the frame of the solar PV modules is entirely possible. In this instance, both the AC and DC circuits need to be protected by Type-1 SPDs.

Source: Il Fulmine / DEHN ITALIA S.P.A.

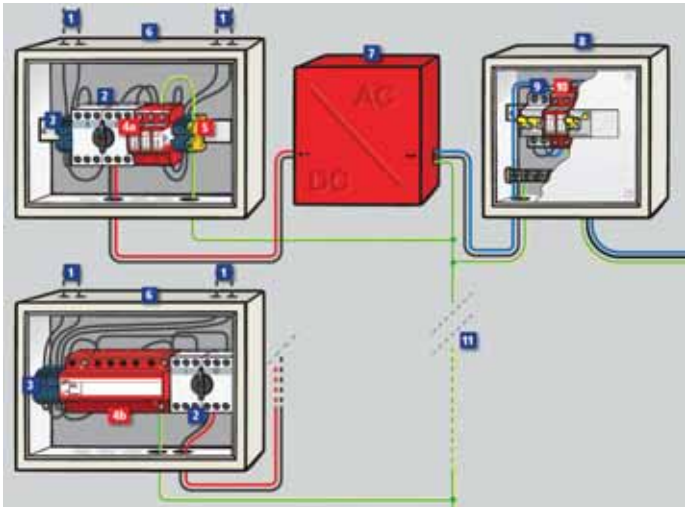


image shows DC connection with Type-2 SPD (4a) as no lightning protection system (LPS) is fitted to the roof and then (4b) showing a Type-1 SPD (combined lightning and surge arrestor) as the separation distance is not maintained and flash-over can occur

DC cable inputs from PV strings
DC isolator
DC connection terminals

4a.	**Type 2 DC SPD from Dehn DG M YPV SCI 1000**
4b.	**Type 1 DC SPD from Dehn DLM PV 1000 V2**
5.	**Earth terminal ground connection**
6.	**DC connection enclosure**
7.	**Inverter**
8.	**AC connection enclosure**
9.	**AC isolator**
10.	**AC SPD type 2 Dehn DG M TN 275**
11.	**Earth connection to MET or ground.**

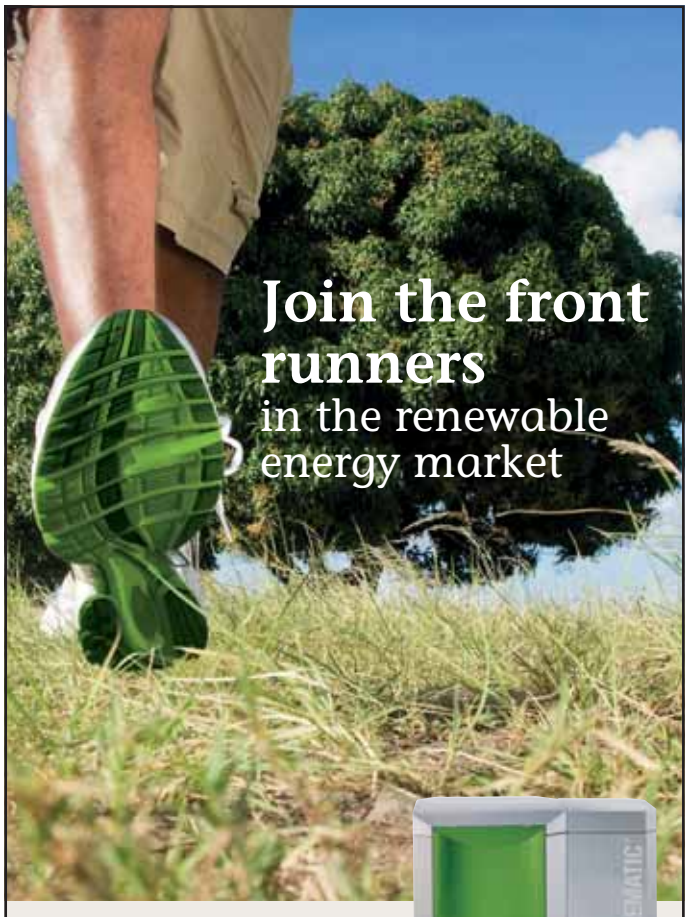
Flying Solo

Green Energy Options (GEO) designs and produces a range of energy information products and services for energy markets

The offering from Green eneergy Options includes in-home displays with online energy services and mobile applications.

According to the company, creating a point of difference in a competitive market is important and GEO's new PV solution is designed to offer that. As a result it is launching its next generation PV monitoring system, the Solo II PV. This new version shows generation, with a live connection to a smartphone or PC. It connects to the generation meter's pulse output and is said to be easy to install. Additional features include: live PV generation in kWs; money earned from the Feed-in Tariff; when to switch on appliances to take advantage of generated electricity; internal house temperature; a bridge connection to the internet to allow continuous upload to web service and recent historical generation information.

Looking out: GEO's Solo II PV is a monitoring system offering a range of benefits including money earned from the Feed-in Tariff



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Bright future

There has been more evidence of confidence returning to the market for solar power, says **EvoEnergy** who is reporting record demand from business

EvoEnergy's commercial arm has just enjoyed its busiest summer ever.

Demand from domestic customers has also been stronger than expected. But it is the growth in interest from commercial customers which has caught the eye. EvoEnergy took orders of two million pounds for commercial projects in just one month. This comes in the wake of the government dramatically cutting the Feed-in Tariff, the amount which is paid to homeowners and businesses for producing solar power.

Dr Kevin Hard, EvoEnergy's chief executive officer, said: "A lot of people said when the Feed-in Tariff rates were cut by 50 per cent that solar was dead, but in the past year the cost of installing a solar power system has dropped by around 60 per cent, which means the returns are still attractive at around 12 per cent.

"Financial directors have recognised this and are really now seeing the benefits of investing in solar energy to cut high energy costs and generate income," said Hard.

EvoEnergy's commercial sales figures are even more impressive considering that the fall in installation costs means that the overall value of a project has fallen significantly.

Hard added: "We've never seen so much interest from businesses. Demand has been strong from contractors, from farmers, from the public sector and right across industry."

Good times: Kevin Hard, EvoEnergy. The company is reporting record business

In the last few months EvoEnergy's commercial customers have included fire stations, leisure centres, shopping centres and warehousing operations. The company has noticed a change in emphasis from potential buyers, with customers looking to make the most of the electricity provided by solar power rather than just maximizing the repayments under the feed in tariff.

Hard said: "A lot of the demand is coming from operations which are big users of energy. We are designing systems to produce as much power as possible and can often generate all of a site's daytime electricity."

Signed and sealed?

You've completed the installation, handed the paperwork over to another satisfied customer and left the site. Job done – or is it? Asks **David Jones**, general manager of Deks UK

All solar installations must be carried out by MCS registered installers following the government's Microgeneration Installation Standards (MIS). Contrary to popular belief, these standards include clear regulations regarding fixing solar panels onto roofs. MIS 3001 2.1a for solar thermal and MIS 3001 2.1 for PV state that 'in all circumstances the building's weather tightness must be maintained.'

Yet many of the on-roof installations we see do not have appropriate seals around roof penetrations or protection for PV cables, creating problems for the future – or in the shorter term a serious risk of failing the spot checks we hear are currently being carried out by MCS inspectors. If installers fail their MCS accreditation assessments or substantiated complaints are received, then the certificate holder is liable to carry the additional costs of re-inspection which at current daily rates will be an eye-watering minimum of £600 plus VAT.

Cause of the problem

Lack of training or understanding how to carry out best practice weatherproofing of pipes and cables is more likely to be the cause than poor installation of the collectors themselves. Failure to adequately protect cables from damage can easily reduce the effectiveness of the system and create a possible electrical danger.

Under the MIS regulations, just because you may not have designed the system you are installing, it does not mean that you will not be held responsible if the roof leaks. As an installer or subcontractor you still have to be competent enough to review and verify that the design would meet the MIS standards set out, so having a lack of knowledge is not a valid excuse.

Flashing solutions are seldom included in the manufacturers' installation kits but it is a crucial part of the process that is often overlooked on cost grounds.

All manufacturers want to see their products fitted correctly to deliver optimum performance to the end user, yet whilst the use of flashings is included in training seminars, most of the installation guidelines in manufacturers' kits don't cover recommended ways to seal the penetrations.

Ideal world

In an ideal world, flashing products would be included as part of installation kits or merchandised alongside. Companies including Deks are working closely with merchants and suppliers to try to achieve this to help drive up consumer confidence levels in solar and improve installation standards.

The solar industry has always been competitive and with the changes in Feed-in Tariffs installers have been hit hard by the resulting sudden downturn in business. Keeping job costs to a minimum is important, but failing to properly weatherproof roof penetrations and adequately protect PV cables from damage could prove to be a false economy.

Cutting corners: David Jones, general manager of Deks UK, says that using flashings such as the Solardek will save on costs in the long run

So how much do bespoke solar flashings cost? A typical domestic solar thermal installation requires two pipe flashings at a total cost of no more than £60. A single multi-cable flashing at £30 or less will both protect and weatherproof all the cables on a typical PV installation.

Specially designed flashings are easy and quick to fit and take away all the hassle involved in fashioning DIY solutions on each job. Compare this with the possible costs of MCS re-inspections, running the risk that the penetrations will leak exposing you to the possibility of being called out to carry our costly remedial work or face a claim for damages.

Reputations take years to build and just seconds to destroy. Word of mouth recommendations are the best and cheapest way to grow your business so why jeopardise your business by cutting corners on flashings?

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ELTEK always on

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Jason Hobbins, managing director, EnergyMyWay, looks at architects and renewable energy specialists as a perfect partnership

As eco homes and renewable energy become more popular and new technologies emerge, architects are faced with a growing challenge. Clients want the very latest in sustainable design, but how does an architect make sure they give the best advice and select the most appropriate technologies for their scheme?

Jason Hobbins, EnergyMyWay, explains how the company is pioneering a new partnership with architects, enabling it to present an expert 'eco partner' to its clients.

"There is increasing pressure on architects to produce the very latest sustainable designs. At the same time the renewable energy industry is becoming more refined, with technology development accelerating and options for clients broadening. At EnergyMyWay we have developed a relationship with architects who wish to form a partnership to provide a specialist renewable energy service.

"In many cases, architects have suffered from legacy issues, particularly when working with ground source or air source heat pumps that may have been poorly installed or under-sized, leaving their clients with much higher energy bills than anticipated and leaving the architect with an ongoing problem.

"Too often a design reaches the build stage and renewable energy becomes more of a 'plug on' than an integrated part of the property, causing problems for builders, architects and importantly clients. Our involvement from the start means a smoother process for everybody."

Oxfordshire based architectural practice, The Anderson Orr Partnership, has forged a successful relationship with EnergyMyWay. Managing partner, Richard Anderson said: "The majority of our clients are looking to include an element of sustainability within their building design. The latest renewable energy products work most effectively with heating, water and electricity systems when the designs integrate these products intelligently from the start.

"Having a renewable energy expert in our team means our clients have the reassurance of a single source of advice for this part of the build. More often than not EnergyMyWay then acts as a subcontractor on the project, supplying and installing the products, which ensures the renewable technologies are installed to the highest standards, giving our clients confidence they will get the best energy performance for their investment."

The Anderson Orr partnership worked with EnergyMyWay when it designed a complete renovation of a 1960s property in Oxfordshire. The existing property was not on mains gas, and the oil heating alternative meant the client enduring increasingly high bills. The client was looking for a complete re-build and wanted to create an environmentally sensitive property, with much lower running costs.

Following meetings with the client to establish what they wanted to achieve, a three-stage approach was created. Firstly, looking at the fabric of the building, cavity wall insulation and external insulation were specified as well as low U-value windows.

Once the building fabric was as energy efficient as possible, space heating and hot water generation were considered. A 25kW Earth Save Products air source heat pump was specified and linked to 400m2 of under floor heating, via a 500litre buffer tank.

The hot water could then be supplied by a 300litre Earth Save Products Ecocent hot water heat pump, which substantially reduces the annual running cost of hot water generation as it is mechanically separated to the external heat pump.

Now the client has a house that exclusively uses electricity for space heating and hot water, free from any reliance on oil. The natural next step was to use solar to generate electricity, a 3.76kWp photovoltaic array was designed for the garage roof.

The end result was a property with a completely integrated energy efficiency solution, an intelligent eco home, sustainable for the long term and low cost to run. The architect produced the best solution for the client and importantly was not left with legacy issues from poorly installed systems where bills are higher than anticipated.

Richard Anderson added: "The partnership of our company with EnergyMyWay means we can give our clients a full service for the sustainable elements of their build; the very best advice, intelligent design and quality-assured installations."

Clubbing together: EnergyMyWay, is pioneering a new partnership with architects, enabling it to present an expert 'eco partner' to its clients

Hotting up

In the run-up to the introduction of Phase Two of the Renewable Heat Incentive (RHI) expected in summer 2013, the coming year will be a defining one for the domestic solar thermal industry. **Tony Staniforth**, Kingspan Renewables, explains why incentives alone are not enough to drive real-time industry growth

Whilst the RHI represents a huge commitment on the government's part, there are still challenges to face before we are likely to see a surge in popularity for solar thermal. The current economic climate has played an important part. In UK households, this is filtering right through from high-involvement purchases like new cars to everyday decisions like food shopping, and there is no doubt that consumers are tightening their belts across the board. Not only are they likely to view investment in renewable technologies more tentatively when times are tight, but many are reluctant to commit without the security of long-term support under the RHI in 2013 – even with the added bonus of help towards initial costs through the RHPP voucher scheme.

Facing the challenges

People will be far more inclined to invest using the RHPP if they know they can count on tariff payments from the RHI in the long-term – and this clarification can only come from DECC. It is vital that the RHI is given the consideration it needs to avoid a repeat of any problems experienced with the Feed-in Tariffs, but now that timescales have been announced, it is important that DECC adheres to them. A pledge that all customers using the RHPP will benefit from the RHI will provide a much-needed boost to installation numbers.

People will be far more inclined to invest using the RHPP if they know they can count on tariff payments from the RHI in the long term - and this clarification can only come from DECC

Getting tough: Kingspan's Tony Staniforth seeks greater certainty over the RHI from DECC

Education is key

Consumer education is also set to play a huge role in solar thermal growth as we move towards the introduction of the domestic RHI, so installer training has never been more crucial. Consumers are keen to find trustworthy, expert sources to help advise them on the options available and help them make the right choice – and local installers are best-placed to respond to this need. They can help explain the unique capabilities of solar thermal collectors and how they can provide an all-year-round solution for homeowners looking to slash bills and carbon footprints.

A bright future

With this in mind, leading manufacturers are already working to support and broaden installer training initiatives. For example, over the past year at Kingspan, we have added new courses to our dedicated Renewables Training Centres. These not only provide a solid grounding in our technologies, they also provide valuable insight into system design, as well as grants and subsidies. However, there is still more to be done. To transform the government's commitment towards renewable heat into widespread practical uptake in UK homes, more could be done to support installers to 'green up' their knowledge. Government training subsidies, for example, would prompt more local installers and SMEs to invest in training to make the most of the commercial opportunity at hand.

As we begin the countdown to the rollout of Phase Two of the RHI, there are many opportunities at hand to build the solar thermal market – and installers will play a key role. Long-term policy road maps are set to provide a framework for greater investment, and as important milestones are realised this will inject an element of certainty at every level of the market.

This will provide a huge opportunity for installers and with the right preparation and support there is no reason why they will not be able to make the most of it and build a strong future for solar thermal.

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Location, location, location

The key ingredient for the successful installation of a micro wind turbine is location, says **EnergyMyWay**

EnergyMyWay installs Kingspan's range of small-scale turbines for private property owners, farmers and small businesses across the UK. Turbines such as the Kingspan KW6 will deliver electricity savings and returns comparable to solar PV, in many cases better, with payback periods under seven years. So what are the issues installers need to be aware of when locating micro turbines?

These products are most suited to rural properties, where a turbine can be sited at least 120metres from the nearest neighbour. The ideal starting point for location would be an area where you have a 'predictable' prevailing wind. The many variables in wind direction and wind energy levels in the UK mean it is almost impossible to predict the performance of a turbine over a 12-month period. The obvious sites for the more predictable prevailing winds are coastal areas and much of Scotland but smaller scale turbines that require less energy to perform are also viable inland when sited correctly.

The market for small-scale wind has been boosted in recent years by the culture of the Feed-in Tariff

Correct siting means the turbine must be at least five metres above the ridge of a property to avoid getting air turbulence from the building. There should be no obstacles in the prevailing wind direction, or if there are then the mast should be high enough so that the hub of the turbine is above any potential air turbulence. Installers should also be aware of topple distance. There must be no buildings within the potential area for the turbine to fall. Access to the grid and the impact on cable runs should also be factored.

Solar tariffs paving way for wind

The market for small-scale wind has been boosted in recent years by the culture of the Feed-in Tariff. EnergyMyWay's wind turbine customers often already have solar PV and have a positive experience with renewable energy and the Feed-in Tariff. A small turbine in the right location can compliment PV and allow customers with appropriate land to receive a second Feed-in Tariff and boost their savings from a second renewable energy source. The new reduced tariff for wind of 21p per kW from 1 December can produce returns of 13 per cent, based on an installation cost of £30,000 for a 6KW turbine.

EnergyMyWay managing director, Jason Hobbins explains why the culture of Feed-in Tariffs is helping the wind energy market.

"The solar PV boom has helped us communicate the benefits of micro wind to our customers. Using language about Feed-in Tariffs, investment returns and payback periods makes sense to those who have already adopted the culture of subsidies. However the complexity of a turbine installation should also be made clear to customers. There is a world of difference between installing PV and erecting a turbine. A highly experienced installation team is essential as there is a lot of potential for error and subsequent poor performance."

Positive effect: The market for small-scale wind has been boosted in recent years by the culture of the Feed-in Tariff, says EnergyMyWay

Addressing planning issues

Across the UK, planning departments currently have varied levels of understanding and empathy for wind energy. This can be very frustrating for manufacturers and installers, especially as a planning refusal may be down to a misconception about the scale and appearance of the turbine.

Kingspan is prioritising an initiative to educate planners on the new generation of micro turbines and drive consistency across the country. As a Kingspan installer, EnergyMyWay is keen to work with planners who clearly understand micro-turbines

"The micro-wind market is showing huge potential in the UK," says Hobbins. "Success in the coming years will come down to communication between manufacturers, installers and planners. If the government continues to support wind energy with the Feed-in Tariff micro-wind will be a major growth area for the renewables industry."

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Flying start

Kestrel's 3.5kW small wind turbine qualifies for the Feed-in Tariff. Said to be ideal for homes or small businesses, under current rates, the turbine will generate £1,000 a year

Soaring success: Kestrel's 3.5kW small wind turbine now qualifies for the Feed-in Tariff

According to Kestrel, DECC has certified its 3.5kW small wind turbine as the only class one turbine (less than 5kW) in the UK that qualifies for the Feed-In Tariff scheme. This means it has withstood 156mph winds and can generate over £1,000 for owners annually.

The certified Kestrel e400nb can produce 3,922kWh annually, and with the FiT scheme currently paying 28p per kWh produced, it can earn £1,098 per year, be less reliant on the grid, and eco-friendly.

"Solid returns from renewable energy, new technology and improved government incentives, makes it easier to become less reliant on fossil fuels," commented Kestrel director. Leon Gouws. "The UK government's target for 20 per cent of the energy to be produced from renewable sources by 2020, and the certification process means people can support this vision, with knowledge their turbine is robust enough to withstand the toughest of winds, and is reliable to ensure consistent energy production."

The Kestrel 3.5kW small wind turbines are said to be ideal for homes or small businesses with the available space for installation. Tested by TUV NEL in East Kilbride, Scotland, the small wind turbine was tested and withstands winds of 156.6mph.

Wind turbines 'could supply half of world's energy' – says report

Wind turbines could satisfy half the world's future energy demands with minimal environmental impact, according to a new report

Industry leaders have welcomed the findings of independent researchers, who calculated the potential of global wind power, taking into account the effects turbines would have on surface temperatures, water vapour and other climatic considerations.

Phil McVan, managing director of Myriad CEG Wind – a renewable energy company – said: "The report confirms that wind turbines are one of the most important sources of clean energy to help meet Britain's energy needs. We welcome its findings about the importance of wind power and its benefits to the environment, compared to other generating technologies. The report is a strong endorsement of our strategy of single or small clusters of high quality and efficient turbines spread across a number of locations."

Myriad CEG has installed more than 300 wind turbines across the UK. His comments come after Cristina Archer, associate professor of geography and physical ocean science and engineering at the University of Delaware in the United States, said: "Wind power is very safe from the climate point of view."

Dr Archer and fellow researcher Mark Jacobson, of Stanford University, identified the maximum wind power potential by finding the saturation point where adding more turbines would no longer increase energy output.

Dr Jacobson said: "The result of this study suggests that there is no fundamental barrier to obtaining many times the world power demand for all purposes in a clean-energy economy from wind."

Researchers found that installing four million turbines could yield up to 7.5 TW, more than enough to power half the world's power demand in 2030. They also showed that spreading wind farms out worldwide in windy locations would increase efficiency, minimise costs and reduce overall impacts on the environment when compared with packing the same four million turbines in fewer spots.

Wind speed: Phil McVan, Myriad CEG: "The report confirms that wind turbines are one of the most important sources of clean energy"

This contradicts claims wind resource is small with damaging climate impacts.

The penny drops . . .

Rainwater harvesting has been slow to show any real market growth but as the cost of water continues to rise and recent water shortages and hose pipe bans grab the headlines, it may yet have its day according to **Ian Stares**, PTS product group manager for renewables

In March 2012 seven water firms introduced restrictions following a particularly dry winter, with South East and Anglian regions officially in a state of drought. The Midlands, South Yorkshire, and the South West didn't escape either. Further measures such as hose pipe and sprinkler bans for domestic residences and public recreation areas were quickly put in place in anticipation of an unusually warm summer.

These shortages not only have a direct impact on water prices – they can also lead to higher electricity rates as utilities pass on the increased cost of using water to cool down the power plants. With homeowners feeling the impact on their pockets now, rainwater harvesting could be promoted as a simple and effective solution.

It's a common misconception that rainwater harvesting can only be used on a small scale, namely for the irrigation of a garden or for washing the car. In fact, modern rainwater harvesting technologies can be used for a variety of non-potable applications, from flushing the toilet to use in washing machines, providing money saving opportunities for the homeowner.

Why then has the British public been reluctant to embrace this technology in the past? The answer is probably in the fact that we place little value on water, we turn the tap on and expect water instantly. What's the point of using rainwater harvesting when it's already so easy to get it from a tap? Plus, it is thought that rain water harvesting is difficult and costly to retrofit.

The answer is that unless homeowners are happy paying rising water bills, this technology needs to be looked at again. As costs rise it is inevitable that many will turn to water metering as a means of monitoring and controlling their water usage. From there, it is only a small step to harvesting and alternative sources of water for non-potable domestic applications.

Efforts to communicate that rainwater systems are technical pieces of equipment, rather than just the traditional water butt, needs to continue if the market is to grow. Modern systems are pressurised, they include a pump to get the water from a storage tank to the point of use. At times of low rainfall a mains water back-up activates, providing continuous water supply.

The alternative is a combi system which uses an internal control unit to boost the supply of water, meaning mains water is safely and consistently topped up. Training is required to be able to specify and install an efficient system and factors such as the intensity of rainfall, the collection surface, and the number of household applications that need to be supplied.

The continued introduction of stringent building regulations provides another good reason to consider rainwater harvesting solutions. Installers, engineers, and architects already need to adhere to the Code for Sustainable Homes. Code three for example, stipulates that the property must conserve and reduce the consumption of mains water from the average of 150 litres per person, per day to 105 litres. Code five even asks for a reduction to 80 litres. The British Standard BS8515:2009 relating to rainwater harvesting was also introduced in 2010 as yet another incentive to begin installing these systems. This standard was introduced to cover design, installation, water quality, maintenance and risk assessment. Therefore, it is important that merchants, like PTS, are continuing to work closely with manufacturers to provide support and training whenever possible.

Splashing out: Modern rainwater harvesting systems are pressurised, meaning they include a pump to get the water from a storage tank directly to the point of use

Rainwater harvesting is one of the oldest forms of water conservation and dates back to Roman times but the availability of a reliable mains water supply has caused conservation to go out of fashion. But our changing climate means that interest and need is returning. As rainwater harvesting and water conservation, and in fact all other forms of renewable energy technology become widely used, it's more important than ever that installers, developers and architects are on top of requirements such as the Code for Sustainable Homes and other enhanced building regulations and that they're able to meet the demands of homeowners.

The real deal

Mark Derbyshire, commercial director north, at Vaillant considers what the Green Deal means for installers and asks is the Green Deal a good deal?

The Green Deal is the most anticipated initiative to impact our industry and, after months of speculation, momentum is now, finally, gathering pace. Designed to overcome the barrier of the upfront capital cost of implementing energy efficiency measures in homes and commercial properties, the Green Deal will play a crucial role in helping meet carbon reduction targets and reducing the number of homeowners that face fuel poverty.

The initiative will also act as a long-term boost for the uptake of high efficiency boilers and some renewable technologies. Although it lacks the direct influence of legislation or the immediate call to action of a scrappage scheme, the Green Deal has the potential and promise to deliver a positive influence on our industry.

While much of the fine detail is still hazy, the last month or so has seen a flurry of activity from DECC and organisations establishing themselves as certified Green Deal providers or members of the Green Deal Finance Company.

Despite this positive momentum however, there is still a large number of installers unsure about what the Green Deal means to them and therefore inactive in the process. This hesitation is understandable: The full detail of the Green Deal won't be known until October and in amongst the speculation has been a tremendous amount of rumour and misinformation.

The reality is that enough is known for installers to take action, even if that is to simply to understand the Green Deal and its opportunities (and threats).

A popular misconception about the Green Deal is that it will only really benefit the large organisations and groups who are able to fulfill all the various elements of the deal, from arranging finance to implementing fabric improvements and, of course, actually performing boiler or microgeneration installations. This isn't the case.

Certainly, these organisations do stand to gain from the Green Deal and of course they will be making much of the noise that

will see the initiative make the transition from DECC's vision to consumers' homes. But to see the Green Deal as being theirs for the taking is pessimistic.

Even taking into account the £2 million DECC has apparently set aside for promoting the Green Deal, the reality is that for the majority of consumers, awareness of the deal and its potential will come via direct contact of their installer. This latter route is clearly an opportunity installers need to be equipped to deal with.

Not only do they need to know how to explain the Green Deal, the golden rule and how it might apply in a particular situation, but they also need to understand how to facilitate the loan and who to partner with to deliver the fabric energy measures encompassed within the deal.

This will take time and energy, and early engagement will place installers in a strong position to defend their market share. Those who take action only after losing a handful of installations to Green Deal accredited suppliers will be playing a frantic – and difficult - game of catch up.

Installer hub

To this end, Vaillant is already working hard behind the scenes to establish a hub for installers seeking to gain a commercial advantage via the Green Deal. We recognise that one-off installers are time poor and need trusted partners to help them cut to the chase and guide them through the pitfalls and opportunities. Installers already look to Vaillant for training, product and technical knowledge so we are now working to extend this to encompass the Green Deal opportunity, including facilitating energy assessments, forging links with other suppliers and, in time, sharing leads.

Opportunity ahead: The Green Deal has the potential and promise to deliver a positive influence on our industry, says Mark Derbyshire, Vaillant

However you look at it, the Green Deal has the potential to be a watershed moment for our industry. That much is still to be understood, even by those close to it, is not an excuse for inaction. If your only action is to engage in education on the topic, that alone will place you in good stead for what's to come.

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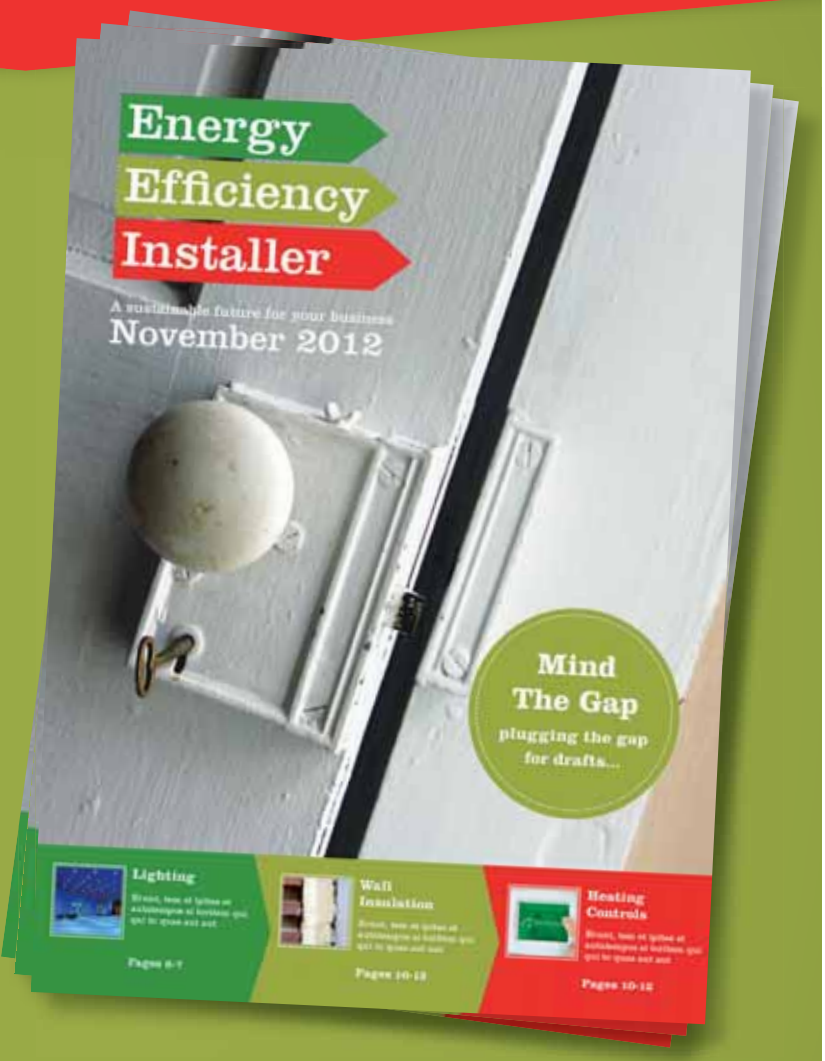

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Green party

There has been much said and written – both for and against - the Green Deal. Whatever your view, for installers, it could signal significant opportunities. **Adrian Wright**, Enact Energy, takes a closer look at what the Green Deal could mean

The Green Deal is a revolutionary piece of legislation enabling households and businesses to upgrade the energy efficiency of their home or workplace, spreading the cost of the improvements with a loan of up to 25 years which is repaid through the electricity bill.

The key in this new legislative change, which will unlock a multi-billion pound industry, is that whoever pays the electricity bill, also pays for the improvement works. This means that for anyone selling or renting their home, they no longer have to pay the loan, allowing them to go ahead and have the works done without worrying about whether they will see a payback on their investment which in turn should increase take up by reducing the investment risk.

In order to safeguard the bill payer, the annual loan repayments must not be any higher than the estimated annual energy bill saving, known as the 'Golden Rule'. With the Golden Rule in place, in theory by taking advantage of the Green Deal, homeowners will see a drop in their energy costs and as energy prices continue to rise, their savings will rise with them.

Not all works will meet the Golden Rule, works which have a high cost relative to the energy they save such as double glazing and renewable energy technologies are unlikely to meet the Golden Rule. In these cases the property owner would need to pay an upfront contribution towards the cost of the work or seek alternative personal finance and only charge a proportion onto the electricity bill as a Green Deal charge. Works can be 'bundled' together, enabling more cost effective measures such as insulation to cross subside the overall energy saving package enabling a larger loan to be applied to the renewable technologies.

There is a list of over 40 upgrades which will be funded or part funded through Green Deal but the most common works expected are insulation, heating upgrades, renewable energy products such as solar and heat pumps and double glazed doors and windows. One of the upgrades which is expected to see exponential growth is solid wall insulation where homes typically built before 1930 have insulation either installed on the outside or inside of the walls. Because the cost of solid wall insulation is so high, the government has put in place a grant funding mechanism through the Energy Company Obligation (ECO).

Through ECO, energy companies will be obliged to offer grants to reduce the cost of the solid wall insulation works and certain other works such as loft or cavity wall insulation in hard to treat homes such as dormer bungalows which need insulation on the pitch of the roof or homes with narrow cavities which may be unsuitable for traditional insulation products.

Due to a slight delay in the legislation, Green Deal Plans cannot officially be signed until the end of January and the loans needed to fund the works could be delayed until April 2013.

Go green: The Green Deal should bring opportunities for the installer as householders make energy efficient improvements to their homes

However, ECO funding will be officially available from October so customers wanting to take advantage of the grants but who may be happy to pay for the balance of the cost of works rather than taking out a loan can go ahead. Some householders in receipt of qualifying benefits may also receive completely free solid wall insulation and heating through ECO.

Business opportunities

The Green Deal is a major opportunity for small and medium sized businesses in the renewable energy installation and energy efficiency sectors. As a Pioneer Green Deal Provider, Enact will be one the first companies in Britain to be able to offer householders works under a Green Deal Plan or grant funding through ECO.

To help installers benefit from the Green Deal, we have launched a Green Deal Partnership service designed to provide a range of benefits and opportunities, including help and support to become an accredited Green Deal installer under the Enact banner, the ability to offer Green Deal finance and services to customers, a regular Green Deal newsletter plus the opportunity to receive leads from Enact through its nationwide marketing campaigns.

We have created the Green Deal Partnership to help make the most of the Green Deal and the opportunities it will provide for years to come. Businesses that can meet our minimum standards criteria will be able to get involved in the Green Deal with a range of support and business growth opportunities whilst helping cut through the red tape that always surrounds these type of initiatives. The Green Deal is here to stay and is just around the corner. For businesses wanting to benefit, the time to act is now.

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Wednesday 17th October

10.00 - 11.00
Training for the Green Deal
Pete Roberts (Head of Mentoring, Easy MCS)

11.00 - 12.00
Solar Thermal Technology and its Applications
Tony Staniforth (Specification Sales Director, Kingspan Environmental)

12.00-13.00
Green deal – What's it all about?
Lu Rahman (Editor, Renewable Energy Installer)
Plumb Center
Cathy Debenham (Director, YouGen)
Jacqui Crawford (Director, OFTEC)

13.00-14.00
Oil Heating's Future – a Panel Debate
Jane Hughes (Editor, Oil Installer)
Mark Askew (CEO, FPS)
Jeremy Hawksley (Director General, OFTEC)
Peter Carter (Sales Director, Atkinson Equipment)
Barry Gregory (Riello)

14.00-15.00
Integrating Oil with Renewables
Dave Hall (National Sales Manager, Grant UK)
Plumb Center

15.00-16.00
EPCs – An overview including their use and training
James Dodd (Director, The National EPC Company)

Thursday 18th October

09.30-10.00
Welcome Address
Tom Greatorex MP
Jeremy Hawksley (Director General, OFTEC)
Martyn Bridges (Worcester, Bosch Group)

10.00-11.00
Renewable Technology Review
Garry Broadbent (Managing Director, ICS Heat Pumps)
Alun Williams (Marketing Manager, HETAS)
Pippa Wibberley (Commercial Director, Glow-worm)

11.00-12.00
Best Practice and Technical Review
Paul Rose (Technical Director, OFTEC)

12.00-13.30
Are Renewables right for your business?
Watson Carlill (Director, Future Renewable Energy)
Andy Buchan (Director, Future Renewable Energy)

13.30-14.30
RHI – What's Going to Happen and How Should you Prepare?
Lu Rahman (Editor, Renewable Energy Installer)
Cathy Debenham (Director, YouGen), (NAPIT)

14.30-15.30
Ground Source Heat Pumps – An Overview
Dave Matthews (Chief Executive, GSHPA)

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Next generation

Ten years after the introduction of its MagnaClean Professional magnetic filter for heating system protection, Adey has launched the MagnaClean Professional2 which it will present at ORES 2012.

Adey claims it is possible to install the new filter in less than a minute, once the system has been drained, bringing to the market a new standard for domestic magnetic filters with faster in-line installation.

According to the company, the product removes virtually 100 per cent of black iron oxide, providing optimum protection for all heating system types including ground source heat pumps and solar thermal collection. It adds that the new filter retains all the energy saving benefits of the original MagnaClean filter which could reduce energy consumption in a typical household by up to 6 percent.

Great save: Adey claims the new MagnaClean Professional2 magnetic filter removes 100 percent of black iron oxide from heating systems

Adey will also showcase its new industry formula range of premium chemicals, designed specifically for use with its MagnaClean filters. **Stand 104**

Firebird's theory of evolution

Firebird's product range at ORES will include its new solar heat pipe system, Envirosol flat panel and vacuum tube solar systems, the Enviropel wood pellet burner and Envirotec wood burner.

According to the company, as the provision of hot water and central heating for domestic homes evolves, interface between solar systems and boilers is ever more important and Firebird condensing boilers are designed to work with all its solar systems.

Firebird will be presenting its new TZ heat pipe solar range which it says is especially cost effective, offering excellent performance and build quality, competitively priced to suit tight budgets. The TZ range is a dry pipe system and has tubes individually fixed, making for easier more convenient handling and reducing the likelihood of damage in transit and onsite. **Stand 99**


TZ58-1800 Heat Pipe Collector

Ready to collect: Firebird's new TZ heat pipe solar range will be on display including the TZ58-1800 heat pipe collector

A cut above

Grant Engineering says it offers the very latest in green technology, such as solar thermal water heating, air source heat pumps, hot water storage cylinders, energy management controls and the Spira condensing wood pellet (biomass) boilers – all of which will be available to see at the show.

For those visiting Grant's stand, there will also be an opportunity to gain expert advice on the latest Renewable Heat Incentive Scheme (RHI) and MCS from one of its technically trained sales managers.

The company says it strives to set its brand apart from the rest, by continuously introducing new energy saving ideas for home heating whilst having a reputation built on many years of successful innovation with award-winning products.

Stand 119

Smart technology: A wide range of green technologies from Grant will be on display at The Oil & Renewable Energy Show 2012

The Renewable Solutions Provider
Making a World of Difference

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LIVING ENVIRONMENTAL SYSTEMS

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MCS-approved Ecodan air source heat pumps help cut CO_2 emissions and household bills.

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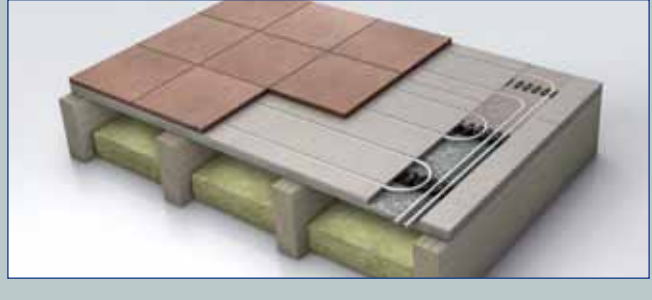
UFH FOR RETROFIT

At just 15mm, the LoPro10™ underfloor heating system from Nu-Heat is ideal for new-build and retrofit!



- Ultra low build up just 15mm plus floor coverings
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- Airborne acoustic reduction on timber and upper floors by added mass – 15.5kg/m² and a solid feel underfoot
- 10mm ultra flexible PEX-c pipework – simple and fast to install, just follow the grooves
- Tiles, laminates and natural timber can be laid directly on top; carpet over 4-6mm ply
- Available for just a few rooms or a full house, designed with heat loss calculations and CAD installation drawings

For more information visit www.nu-heat.co.uk/lopro10

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Ice age is coming

According to Ice Energy, it will exhibit at ORES having supplied and installed more heat pumps to homeowners and commercial developers than any other company and continues to lead the way in the market.

With a product range that includes air source heat pumps, solar PV and underfloor heating, Ice Energy aims to bring together the best of breed products and brands with unrivalled experience and professionalism, in addition to providing a heating system which uses heat pumps to offer significant savings and best value for money.

Ice Energy and its partner SIG Energy Management will have specialist sales team members of hand to discuss a range of renewable energy options for any home or new build project. They will be able to talk you through the options for your specific project and identify any funding which you may be able to take advantage of as well as explaining how the company could help reduce running costs by over 60 per cent.

Stand 102

Multiple solutions

Kingspan Environmental is back at ORES with a product portfolio from industry-leading brands that operate within four sectors - water, solar, wind and environmental management technologies.

Kingspan, which is also sponsoring the show, adds that its products provide both environmental benefits and financial savings for end-users in all areas, providing a 'decentralised' approach to both water and energy management that helps shield end-users from the impact of cost inflation and ensures the future demands of local communities can be met.

The company says it likes to work closely with industry partners to support a guaranteed service level whilst giving installers complete peace of mind. A team of experts will be on hand to help create the best renewable solutions.

Unique approach: Kingspan says it provides a 'decentralised' approach with its product range including solar thermal

Stand 101

Join Mitsubishi's fan club

Mitsubishi Electric will be showing off its full range of Ecodan air source heat pumps at ORES 2012.

The company's stand will not only exhibit the residential range of systems, which Mitsubishi Electric says remain the only air source heat pumps to receive the Noise Abatement Society's prestigious Quiet Mark, but will also showcase the commercial Ecodan CAHV heat pump boiler, which is fully scalable from 43kW up to 688kW.

According to the company, the Ecodan range can operate effectively with outdoor temperatures as low as -20°C and in addition to helping new-builds achieve planning permission, the range can be retro-fitted to existing buildings, and will work independently or alongside other heating systems.

Graham Temple, marketing communications manager for the company's Heating Systems Division, said: "Adding an Ecodan or using it to replace an existing heating system can help buildings achieve renewable energy targets and help meet building regulations such as Part L and the Code for Sustainable Homes."

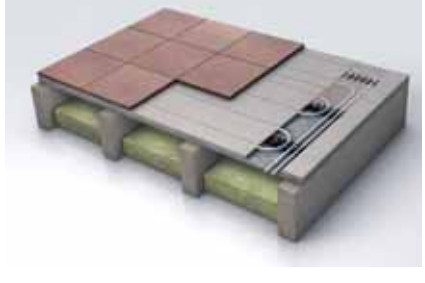
Stand 129

Silver service

Cost-effective and energy efficient heating solutions will be the main topic for Nu-Heat at this year's show with its range of underfloor and renewable technologies.

The company says the event will also provide a great platform for Nu-Heat to speak to installers about how hard it has worked over the last 12 months to give heating and plumbing engineers even better support and develop new products and systems that give installers more services to offer customers.

"After twenty years in business," said Nu-Heat sales and marketing director Adrian Troop. "We recognize that one of the major factors of our success has been our commitment to ensuring that every installer we work with receives all the support they need in order to achieve the right system for their customers."



Premier product: Nu-Heat will be exhibiting the LoPro10, a gypsum-based floating floor that can be fitted on top of the existing floor deck

Stand 55

Bridging the gap

Show sponsors Plumb Center and Parts Center will be demonstrating how they can help installers bridge the gap between oil and renewable technologies.

Product displays will provide topics for discussion, along with a live link to Wolseley Parts Arena, where installers can learn how to locate the parts they need quickly using parts finder technology.

Plumb Center says helping installers participate in Green Deal is a priority for the company which has 14 renewables training courses on offer. It is also working towards becoming a Green Deal Provider, which will complete the package for installers, enabling those who partner with Plumb Center to offer Green Deal finance to their customers. Information on Green deal will be available on the stand.

Back to school: Plumb Center offers 14 renewable training courses to installers from its centres at Sevenoaks and Leamington Spa

Stand 151

Home on the range

With cutting energy usage and reducing dependence on fossil fuels very much at the top of the agenda, Rayburn says it has created a product portfolio to fit the bill.

Rayburn's energy management components include air source heat pumps, ground source heat pumps, biomass, wood logs and pellets. The company will also be presenting its Aga Rayburn solar hot water panels, solar electricity panels and cast iron stoves.

At the heart of the range is the Eco-Connect, Rayburn's panel technology which links everything together by allowing interconnection of different appliances. The panel incorporates a visual display showing the current operating status and which energy source is being used ensuring that energy can be drawn from the greenest source at all times without having to fiddle with buttons and switches.

Intelligent solution: Rayburn has developed the Eco-Connect which links individual technologies in an energy efficient way

Stand 106

Testing positive

Testo says it is an exciting time for the company with several newly launched products to show off at ORES 2012.

The manufacturers of handheld instrumentation will be presenting the Testo 570 Refrigeration Manifold which it says will enable installers to take multiple measurements accurately and quickly when servicing and maintaining refrigeration systems and heat pumps.

It also offers instrument service and calibration on both Testo and non-Testo branded instruments, from Testo's independently accredited ISO 9001:2008 and ISO 17025 laboratories based in Alton, Hampshire.

Visitors to the company's stand will can also benefit from product demonstrations and have the opportunity to enter into an on-stand prize draw and win a Red Letter Day Voucher Worth £100.

Measuring up: The Testo 570 Refrigeration Manifold, from Testo, will be on display at The Oil & Renewable Energy Show

Stand 01

Worcester's wonders

Worcester, Bosch Group will be using this opportunity to showcase its Greenskies solar thermal range, giving an insight into the benefits of a hybrid domestic heating and hot water system for the home.

The show sponsor's dedicated solar area aims to allow visitors to gain an appreciation of the value of using high efficiency solar thermal collectors alongside an oil-fired boiler for maximum energy efficiency.

In addition, the manufacturer will be presenting Greensource air-to-air and air-to-water heat pumps, and its Greenstore ground source heat pumps which it says offers a viable green alternative to traditional sources of heating and hot water, and complies with the legal requirements of G3 Building Regulations.

Representatives from Worcester's team of technical sales managers will be on hand to offer guidance on product specification as well as answering any technical questions or queries.

Stand 65

Figure it out

Current and new generation tariffs for non PV technologies

Technology	Band (kW)	Current generation tariffs (p/kWh)	Consultation tariffs from Oct 2012 (p/kWh, 2012 prices)	Final tariffs from 1 Dec 2012 (p/kWh, 2012 prices)[2]	Community energy tariff
Hydro	≤15	21.9	21.0	21.00	21.00
	>15-≤100	19.6	19.7	19.60	19.60
	>100-≤500	12.1	12.1	15.50	15.50
	>500-≤2000	12.1	12.1	12.10	12.10
	>2000-≤5000	4.9	4.5 (2.2 from April 2013)	4.48	4.48
Wind	≤1.5	35.8	21.0	21.00	21.00
	>1.5-≤15	28.0	21.0	21.00	21.00
	>15-≤100	25.4	21.0	21.00	21.00
	>100-≤500	20.6	17.5	17.50	17.50
	>500-≤1500	10.4	9.5	9.50	9.50
	>1500-≤5000	4.9	4.5 (4.1 from April 2013)	4.48	4.48
AD	≤250	14.7	14.7	14.70	14.70
	>250-≤500	13.6	13.7	13.60	13.60
	>500-≤5000	9.9	9.0	8.96	8.96
microCHP	≤2	10.5	12.5	12.50	12.50

(Source: DECC)

RHPP grants

All house
Solar thermal - £300 – cash voucher valid for three months

Houses not heated by gas from the grid
Biomass boiler - £950 – valid for six months
Air source heat pump - £850 – valid for five months
Ground source or water source heat pump - £1250 – valid for six months
(Source: Energy Saving Trust)
Eligibility criteria can be found online by visiting: **www.energysavingtrust.org.uk/Generate-your-own-energy/Financial-incentives/Renewable-Heat-Premium-Payment-Phase-2**

Current and new generation tariffs for Solar PV

Tariff band	Curret FiT rate P/kWh	Digression rate %	FiT rate from 1st November 1 P/kWh
4kW	16.0	3.5	14.44
4-10kW	14.5	3.5	13.99
10-50kW	13.5	3.5	13.03
50-100kW	11.5	0.0	11.5
100-150kW	11.5	0.0	11.5
150-250kW	11.0	0.0	11.0
250kW-5MW	7.1	0.0	7.1
Standalone	7.1	0.0	7.1

Number of registered installations since 2009

Technology type	Total number of domestic installations	Last month available (July 2012)
Solar PV	365,707	26,170
Biomass	1,458	41
Air source heat pump	8,436	151
Exhaust source heat pump	249	15
Ground source heat pump	3,001	42
Hydro	63	1
Micro CHP	508	2
Solar thermal	2,974	70
Wind	2,672	101
Total	392,703	26,798

Source: Gemserv

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	0.55 per litre	2530 litres	£1,392
Wood chips	3500 per tonne	90	25300	100 per tonne	7 tonnes	£723
Wood pellets	4800 per tonne	94	24300	200 per tonne	5 tonnes	£1,016
Natural gas	1 per kWh	90	25300	0.048 per kWh	25300 kWh	£1,214
LPG	6.6 per litre	90	25300	0.5 per litre	3833 litres	£1,917
Electricity	1 per kWh	100	23000	0.145 per kWh	23000 kWh	£3,335
Air source heat pump*	1 per kWh	290	7931	0.145 per kWh	7931kWh	£1,150
Ground source heat pump*	1 per kWh	380	6053	0.145 per kWh	6053kWh	£878
Dual mode system 1						
Oil boiler (30% of heat load)	10 per litre	90	7590	0.55 per litre	759 litres	£417
Air source heat pump (70% of heat load)	1 per kWh	290	5552	0.145 per kWh	5552 kWh	£805
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	0.145 per kWh	5552 kWh	£805

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

RHI non-domestic rates

Tariff name	Eligible technology	Eligible sizes	Tariff rate (pence/kWh) from 1.4.2012	Tariff duration	Current installed capacity (MW)
Small biomass	Solid biomass: Municipal solid waste (inc CHP)	Less than 200 kWth	Tier 1 - 8.3 Tier 2 - 2.1	20	
Medium biomass	"	200 kWth and above, less than 1000 kWth	Tier 1 - 5.1 Tier 2 - 2.1	20	
Large biomass	"	1000 kWth and above	1.0	20	47.094 (all sizes of biomass)
Small ground source	Ground source heat pumps, water-source heat pumps, deep geothermal	Less than 100 kWth	4.7	20	
Large ground source	"	100 kWth and above	3.4	20	0.162 (all sizes of heat pumps)
Solar thermal	Solar thermal	Less than 200 kWth	8.9	20	0.063
Biomethane	Biomethane injection and biogas combustion, except from landfill	Biomethane all scales, biogas combustion less than 200 kWth	7.1	20	0.000

(Source: OFGEM)
The domestic element of the RHI is expected to be introduced in the summer of 2013 following a UK Government consultation in September 2012

Carbon emissions of different heating fuels

Fuel source	Carbon emitted(Kg)	Carbon dioxide emitted(Kg)
Heating oil	1,360	5,060
Wood pellets	207	759
Natural gas	1,380	5,060
LPG	1,380	5,060
Electricity	3,136	11,500
Air source heat pump	649	2,380
Ground source heat pump	330	1,210

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

PV ROIs

System specification
Size: 4kWp
Annual production: 3,500 kWh
FiT generation rate: 16p/kWh
FiT export rate: 4.5p/kWh
Grid price: 14.5p
System cost: £8,500

Savings and returns with current Feed-in Tariff*

FiT generation payment: 3,500 x 16p = £560
FiT export payment: (3,500 x 0.5) x 4.5p = £78.75
Annual bill savings: (3,500 x 0.5) x 14.5p = £253.75
ROI: (560 + 78.75 + 253.75) ÷ 8,500 x 100 = 10.50%

Savings and returns with Feed-in Tariff from November 01*

FiT generation payment: 3,500 x 15.44p = £540.40p
FiT export payment: (3,500 x 0.5) x 4.5p = £78.75
Annual bill savings: (3,500 x 0.5) x 14.5p = £253.75
ROI: (540.4 + 78.75 + 253.75) ÷ 8,500 x 100 = 10.27%

*Assumes 100 percent efficiency, a south facing roof and 50/50 split between self use and export

Picture this

Whether an energy assessor is engaged to produce an Energy Performance Certificate or to inspect the efficiency of an air conditioning system, the perfect tool for the job is a thermal imaging camera, says **Andrew Baker,** FLIR Systems

Thermal imagining technology is now industry standard, allowing energy loss to be visualised, missing or defective insulation to be detected and air leaks sourced. Proven hardware and application-specific software enable the job to be done quickly and efficiently, providing visual evidence to support the findings.

Thermal imaging has certainly proved to be invaluable in the field of energy management but what are the latest developments? An important area is related to how widely thermal imaging cameras are being used.

More rugged, more sensitive

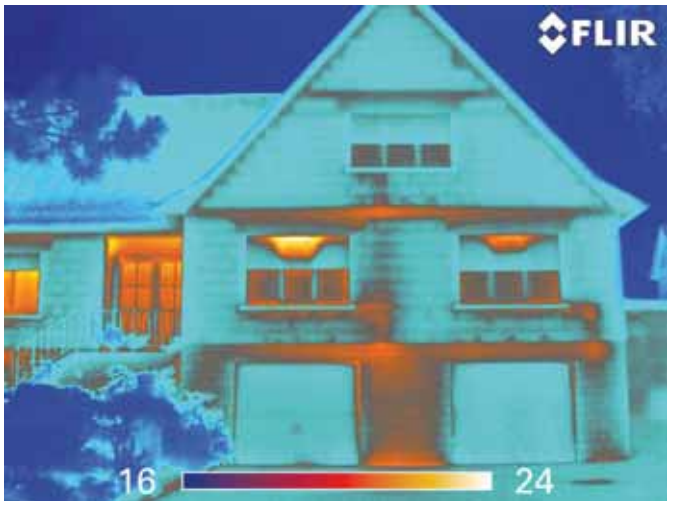
For most, a thermal imaging camera is an essential piece of kit that is used daily. This means it must be fit for purpose and designed to withstand the rigors of industrial and building environments. As a result new cameras are becoming much more robust than their forerunners and subjected to stringent drop tests to confirm their durability.

In addition to being more rugged, the compact cameras typically used by an assessor are becoming more sensitive. The mid-range Flir i5 for example, produces an image of 100 x 100 pixels, an improvement of 56 per cent on the previous generation model.

In effect, this puts 10,000 measurement points at the user's disposal allowing a larger area to be inspected and for the thermal anomaly to be considered, in context. This improvement is complemented by a wider field of view.

Ease of use has also been greatly improved. A fixed, focus-free lens eliminates the need for set-up and the basic operation of a camera can be easily grasped within a few minutes. Thermal images are stored in JPEG format on an SD card or in the camera's internal memory; all temperature data is embedded in the image. Basic analysis tools such as spot meters and isotherms are also standard on many models.

Compact cameras now incorporate many more sophisticated features. A good example is the inclusion of wireless technology in thermal imaging camera design. This significantly boosts the scope of application as it allows data from a WiFi-enabled moisture meter or clamp meter to be transferred to the corresponding thermal image. This technology also allows thermal imaging cameras to communicate with mobile devices such as an iPhone, Android or iPad. The result is far greater application flexibility as it allows images to be shared with colleagues.



Positive proof: Thermal imaging technology allows energy loss to be visualized – an ideal tool for the energy assessor

Handy aside: Even though software has become more sophisticated, says Andrew Baker, it has never been more affordable

Low cost software

The parallel development of analysis and reporting software is also of significant importance. Again the choice for the building industry is fulsome and new packages allow images to be exported to a PC, analysed and formulated into a basic report with the addition of headers, footers and logos. They also enable filters to be applied when searching for images.

Even though software has become more sophisticated however, it has never been more affordable. Whereas a good reporting package used to cost in the region of £1,000, premium software products are now available for less than £150.

Although the lower entry cost to the technology is attracting more users it puts even more emphasis on the need for training. Thermal imaging cameras may be getting smarter but that is no substitute for the user fully comprehending the science behind the technology.

Knowing the principles of infrared is a vital part of getting the best return on the camera investment. So, at the very least, the user should attend a course that covers the basics and better still, become a certified Level 1 thermographer.

VOLTAGE OPTIMISATION

What: Improved energy efficiency for Surrey leisure complex

How: Using an iVolt voltage optimisation system

Result: £15,000 annual reduction in energy bills

Bosses of a 70-bedroom hotel and leisure estate says they are saving thousands of pounds in electricity bills and creating a more energy-efficient workforce after turning to voltage optimisation.

Foxhills Hotel and Resort in Surrey has seen its energy bills drop by more than £15,000 a year thanks to the energy saving technology, which is made by British manufacturer iVolt.

The Surrey club, which hosted the Team GB Cyclists during the Olympics, sits in 440 acres of land and with four swimming pools, 12 tennis courts, a spa, two championship golf courses and a conference centre, was running up monthly power bills of around £13,000 and an annual power consumption of 2,074,236kWh.

The new equipment not only reduces electricity consumption by lowering the incoming voltage to the four star estate, but records the peaks and troughs of use to help staff monitor their own behaviour and consumption.

"Our energy demand grows year on year and with it our bills rise so for some time we had been considering ways of tackling this problem," said facilities director Ben Biggs. "Foxhills is a very busy place; we've got a lot of guests moving through and a workforce of 150-160 people and that means a lot of energy used.

"The savings are three-fold really," added Ben. "The iVolt not only saves us money by reducing the amount of power we use but it reduces the strain on equipment, which means it lasts longer, and by monitoring our energy consumption in real time it provides me with crucial information which I can then take to my staff to make them more conscious of the electricity we're using - and in many cases wasting. This tool was really the reason we chose iVolt over its competitors and we're very happy with the results we're seeing."

Power cut: Foxhills Hotel and Resort in Surrey has seen its energy bills slashed by £15,000 a year due to iVolt

INSULATION, HEAT PUMPS AND SOLAR PV

What: An energy efficient and sustainable luxury home

How: Using an air source heat pump, solar panels, carbon wood burning stove

Result: Energy Performance Certificate rating A

With their grandchildren's futures in mind, Bob and Judy Burlton took a long-sighted approach to choosing a sustainable home in Nottinghamshire.

The couple, who are moving from Oxfordshire to be closer to the youngest members of their family, have teamed up with local developer Chebsey Estates to create a luxury home at Oak Tree Court in Tollerton that will suit their lifestyle and cut their carbon emissions significantly.

Mr Burlton (63), co-founded the Energy Saving Co-operative in his retirement and supports the reduction of the carbon impact of Britain's 26 million existing homes.

"With a fourth grandchild due in May, our main reason for moving to Nottinghamshire is to be closer to our family," said Mr Burlton. "But this has also given us the opportunity to move to a home with excellent eco credentials. Homes at Oak Tree Court sparked my interest because of their environmental performance, and the fact that Chebsey Estates offered to work with us to adapt the design of the property under construction to suit our preferences.

"Making an older property more energy efficient can increase the cost of moving dramatically, and so a saving on the purchase price is a false economy. I worked out that one older house we had looked at would need around £75,000 spent on it to make it perform to a standard similar to homes at Oak Tree Court.

"We were looking for a house with an Energy Performance Certificate rating of C or above, and with solar panels installed, the house we have purchased will be near A-rated."

Mr and Mrs Burlton's new home benefits from state-of-the-art technologies that are included as standard at Oak Tree Court.

An air source heat pump provides around three-quarters of heating and hot water. This cost-efficient system is teamed with warm water underfloor heating in every room, which uses around 85 per cent less energy than hot water radiators. A log-burning stove burns wood so efficiently that it emits no more carbon dioxide than wood left to rot naturally.

Living the dream: Bob Burlton, co-founder of the Energy Saving Co-operative, has made his new home energy efficient to suit his sustainable lifestyle

My working week

Who: Paul Beaumont, managing director, The House of Solar
What: The House of Solar supplies custom-designed PV systems and solutions to homes and businesses nationwide.

Spread the word: Paul Beaumont, The House of Solar, says the industry has to work harder to get across the economic message about PV

Site surveys, new websites and being quintessentially English

Monday
My first task for the week is to respond to all the enquiries that have come in via our new website which launched a few weeks ago. The new site includes an online quoting function that integrates with Google Maps allowing users to pinpoint the exact boundaries of their roofs. It uses accurate data on roof size, slope, orientation and exposure to sunlight, as well as typical electricity bills to produce instant estimates which include specifications, cost, number of panels required, shade assessment, return on investment ROI and typical earnings from the Feed-in Tariff.

Tuesday
Today I am on the road, visiting potential customers. I visit a number of homes in the South West to measure up some roofs and confirm quotes. The first home I visit is a large house with a beautiful roof, but unfortunately it isn't suitable for more than two panels. The family had been told by another two companies that they could fit ten panels on it ... which was disappointing to hear. There's little point offering solutions that will not work in practice. However, we were able to offer an alternative solution of ground mounted panels in the garden, giving the customer real value for their investment.

Wednesday
Back in the office on Wednesday, I have back-to-back meetings with both existing and potential partners. We like to keep up-to-date with new technology and we are always on the lookout for innovative products to add to our portfolio. With the Feed-in Tariff reduction, we need to make sure that make our proposition is even more attractive to customers.

Thursday
Thursday morning was spent back on the road, firstly quoting for a potential commercial client that had heard about us through our work with the Diocese of Bath and Wells, where we fitted solar panels on the roofs of 60 vicarages in the South West. I was then off to a school in the same area to take measurements for solar panels on their roof. We've seen a lot more commercial enquiries coming in recently which we're really excited about.

Friday
Friday is a busy day spent preparing for the Wiltshire County Show where we are exhibiting over the weekend. We had to set up our stand and prepare all of our marketing brochures and leaflets. The show itself was great fun, a quintessentially English event,

Thursday morning was spent back on the road, quoting for a client that had heard about us through our work with the Diocese of Bath and Wells, where we fitted solar panels on the roofs of 60 vicarages in the south west

with horse trials, sheep dog demonstrations and even llama racing. It was windy, and a little wet, but that didn't stop many thousands of people coming along and enjoying themselves.

We spoke to lots of people about PV products and used our website to create on-the-spot quotes which proved popular with visitors. We were surprised to hear that a lot of people thought the Feed-in Tariff had stopped all together. We obviously have to work harder to get the message out there that solar panels can save people money and save the planet.

www.SMA-UK.com

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thanks to excellent efficiency

Low specific price
makes it even more cost-effective

Focused
on homogeneous commercial plants

Universally applicable
thanks to its fulfilment of all relevant standards

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It's all about the perfect combination: The new Sunny Tripower 15000TL/20000TL Economic Excellence guarantees an outstanding efficiency rating of 98.5% at a significantly lower price. This is what makes it the ideal inverter solution for medium to very large scale PV plants. The result: lower investment costs and an extraordinary high yield. Take advantage of the essentials that meet all your requirements, including reactive power supply, grid support, and grid management integration.

ENERGY THAT CHANGES

SMA

TRITEC

Looking for a flexible mounting system, saving you both time and money?

Innovation is driven by passion. We combine impressive solutions into one well-thought-out system. **TRI-STAND** for example is suitable for the quick and cost-effective insertion of PV modules on pitched and flat roofs as well as building exteriors. Plus, thanks to our dimensioning software **TRI-DESIGN**, you can design everything in no time at all – and in compliance with all the applicable standards. This way, increasing efficiency is child's play – from the smallest to the largest solar system. **www.tritec-energy.com**