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Editor's comment

A balancing act

Ecobuild is just around the corner and despite the recent Feed-in Tariff changes, the industry largely seems to be looking ahead to the opportunities which lie in store throughout the rest of the year. Whilst it would have been very easy for the PV sector in particular, to have swapped its 'sky's the limit' thinking for a downcast gaze, there seems to have been a positive approach to the changes and an embracing of new initiatives – the Renewable Heat Incentive and the Green Deal – which could provide a ream of business potential for the installer.

Of course, with new opportunities on the horizon, the coming year should prove a highly fruitful time for many of you. Of course, it is not without its challenges. The intricacies of the Green Deal need to be examined, training undertaken and where many companies are looking at diversifying into new technologies, there are the skills issues that need to be taken into account.

The trick is finding a balancing point. It would be easy to allow an over-riding optimism to take hold; that the forthcoming Green Deal will bring with it a steady stream of orders, for example. Similarly, it would be just as simple to fail to see the real benefits ahead and focus simply on the sheer volume of work that needs to be undertaken - this week and next - in order to achieve them.

This really is an exciting time for renewables and Ecobuild promises to be an exciting event as we learn the true extent of recent industry happenings and how they will (or will not) inform the rest of 2012. The green economy is something we all need to embrace and this year's show should hopefully offer an array of opportunities to point the way as to how these can be achieved.

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.

Advertisers are responsible for the information contained in their adverts, and Renewable Energy Installer does not accept responsibility for inaccurate or misleading information contained in the adverts.

"The overwhelming majority of MCS-related complaints we receive are from members of the public regarding their heat pump installations" p28 Steve Pester, BRE

Evoco Energy back on track

Evoco Energy reports that its fleet of turbines will shortly all be back up and running.

Evoco issued an isolate-and-brake notice to turbine owners at the end of December ahead of expected hurricane force storms, however despite this, several turbines were reported to have suffered blade failure incidents in extreme winds.

Commercial director, Fraser Marwick, explained: "We had already identified that some of our turbines exhibited an unusually high rate of yaw which can lead to turbines experiencing damaging gyroscopic forces."

The yaw of the turbine is its ability to face in different directions. If this movement is too fast, turbine blades can be subjected to a bending force beyond the limits they are designed for.

"Unfortunately some of our turbines were not braked during winds which reached record speeds of up to 112mph and a small number of failures occurred in severe turbulence. This prompted us to extend the duration of the shutdown notice pending an upgrade despite 98 per cent of the fleet being unaffected. During the shutdown, we have been paying ex gratia compensation to all customers, in addition to performing the upgrades under warranty.

"Recent newspaper reports suggested a problem with our blades, but in fact our blades are extremely strong", continued Marwick. "The fix, which we have developed under scrutiny from our MCS certification body is quite simple, and aimed not at blades but at controlling movement in the yaw axis.

"We are incorporating a yaw dampener to limit the maximum rate of yaw. This dampener will ensure that the turbine's behaviour, and the consequent forces on the turbine, will be kept comfortably inside the turbine's original design limits."

The Evoco 10 is designed and certified for Class 2 wind regimes.

"That's quite hostile wind, but we can confidently report that, with the upgrade, the Evoco 10 is fully up to the heavy duty job for which it's designed," added Marwick.

Evoco reports that over the next few weeks all affected customers will be contacted by the company to complete works and enable turbines to be switched back on.

According to Marwick: "Since the recent Feed-in Tariff announcements we have seen a surge in demand and are rapidly filling our order book."

Questioning the cost of going green

Renewable Energy campaigners and installers alike have criticized ITV over its examination of the cost of renewable energy incentives in its programme 'The Cost of Going Greener'.

Aired on 9 February, several aspects of the programme have been challenged including the level at which consumers fund green technology subsidies through their annual bills and the perception that the Feed-in Tariff has led to unreasonably large profits for installers.

Cathy Debenham, founder of consumer information website YouGen, said: "The information on the Feed-in Tariff was out-of-date. For those of us who try to give clear information to consumers, it makes things that bit harder."

Cotswold Energy Efficiency Centre's md, Andrew Buchan, said: "It was filmed last September before the solar PV gold rush so I think some people in the programme would probably have said different things now.

Zara Glew, of Environmental Energies, said: "The show was very negative. When you look at how much money the large energy companies make from rising bills, it's nowhere near the profits of renewable energy installers. I think the show was a bit unfair to Ploughcroft. What's more important is that every carbon emission we cut is for the better."

Chris Hopkins, md at Ploughcroft, added:

Gloomy picture: ITV's investigation into the cost of green technology has been labelled as negative and unfair

"The ITV interview I took part in was filmed for approximately two hours at our eco roof visitor centre, however, ITV only showed two, one minute points. As a whole, ITV Tonight's 'The Cost of Going Green' did not get the correct message across to home owners."

British Photovoltaic Association set to impress at Ecobuild

Following the success of its stand at Ecobuild 2011, the BPVA says it will have a stronger presence at this year's event.

To kick-off Ecobuild the BPVA and the Associate Parliamentary Renewable and Sustainable Energy Group (PRASEG) are co-hosting Eve of Ecobuild drinks in Parliament where Greg Barker MP, minister of state for energy and climate change, and Peter Byck, director and producer of carbonnationmovie.com will speak.

The BPVA stand at Ecobuild, will give members the opportunity to showcase their products and services, give a daily presentation on a range of topics as well as networking or relaxing in the member lounge.

Reza Shaybani, chairman of the BPVA, said: "Ecobuild 2011 was extremely successful and the BPVA believes this year will be even better. Ecobuild is an important event in our industry calendar and most of our members are exhibiting or visiting the show. We are there to support them and also encourage new companies to join us. Visit us at stand number N324."

Growing stronger: The BPVA is looking forward to Ecobuild

"Green Deal offers a massive opportunity for all trades associated with energy efficiency, environmental management, assessing, surveying and installing," p11 Garry Worthington, Climate Energy

News in brief

The branding of Sanyo Component Europe HIT solar modules will change from Sanyo to Panasonic. This is part of a consolidation of brands by parent company Panasonic.

Plumb Center has joined the executive committee of the Micropower Council. The company says it will represent the needs of independent installers at the trade association.

Econergy, supplier of wood fuelled boilers, has appointed Ian Herdman and Joanna Hampsheir as commercial managers. Herdman will cover the South West and South Wales regions whilst Hampsheir will cover the South East.

Inverter manufacturer Fronius plans to launch a subsidiary in. Based in Shanghai, the subsidiary will employ 12 people in sales, after-sales care and marketing.

The National Skills Academy for Environmental Technologies has appointed Cathryn Hickey as a director. She was previously an operations manager at the organisation.

Trade association NAPIT is freezing registration prices for 2012 due to the current financial climate. Its membership now stands at over 9,000.

The charitable arm of BPEC has been rebranded as The BPEC Charity to coincide with a new initiative called the Life Award. The aim of the award is to recognise the use of plumbing to benefit lives anywhere in the world with a first prize of £100,000. The closing date for submissions is 30 June 2012 with forms available at www.bpec.org.uk/lifeaward.

Viessmann has a new sales manager for renewable systems, Colin Bland.

Verdo Renewables is now the preferred supplier of wood pellets and briquettes for the Travis Perkins Group of building merchants. Verdo's products are FSC accredited.

Alistair Forbes has taken over the role of ceo at Monier Redland UK, suppliers of roofing materials, from Mark Randall who moves to the position of vice president of the Monier Group.

PV manufacturers Suntech Power and DuPont have signed a strategic agreement focusing on technological advancements, supply chain optimisation, co-marketing opportunities and cost reduction initiatives.

Stealing the show

The countdown has begun for the Oil and Renewable Energy Show 2012 (ORES) which will be held at Manchester Central on October 17 and 18. At the 2012 show's press launch hosted by organiser A & D Publishing, a large number of journalists and sponsors gathered for the unveiling of ORES at The Ice Bar, London.

Underlining its credentials, exhibition director, Jonathan Hibbert, said: "October's show, and its complementary seminar programme, will be an essential event for all those involved in the planning, specification, purchase and installation of both the very latest in renewable energy alternatives and oil-fired heating equipment. It will also present a unique opportunity for consumers eager to learn more about renewable technology for their own homes, and the regulations surrounding such energy."

Along with industry body OFTEC, Kingspan Environmental, Parts Center/Plumb Center, Worcester Bosch, Harlequin, Warmflow, and Riello have all chosen to sponsor the national exhibition whilst demand for exhibition space is strongly exceeding expectations.

Charles Burns, Kingspan Environmental's commercial director, added: "Kingspan Environmental is, once again, the proud commercial sponsor of the Oil & Renewable Energy Show 2012, following the outstanding response we received in 2010 from installers and other visitors to the inaugural show."

Following the success of the inaugural show at Coventry's Ricoh Arena in 2010, over 50 per cent of all available space has already been booked by well-known names from the renewable energy sector including Testo, Rayburn and Mitsubishi Electric.

For further information or to book exhibition space, please contact the Oil & Renewable Energy Show team on 01565 653283. www.oilandrenewableenergyshow.co.uk

Your help please
The ORES team is looking at extended opening hours for this year's event. Would you like the show to be open until 8pm – would it be useful or not? Please email your answer to laura@oilandrenewableenergyshow.co.uk

Top venue: ORES will be held at the award-winning Manchester Central conference and exhibition complex on October 17 and 18

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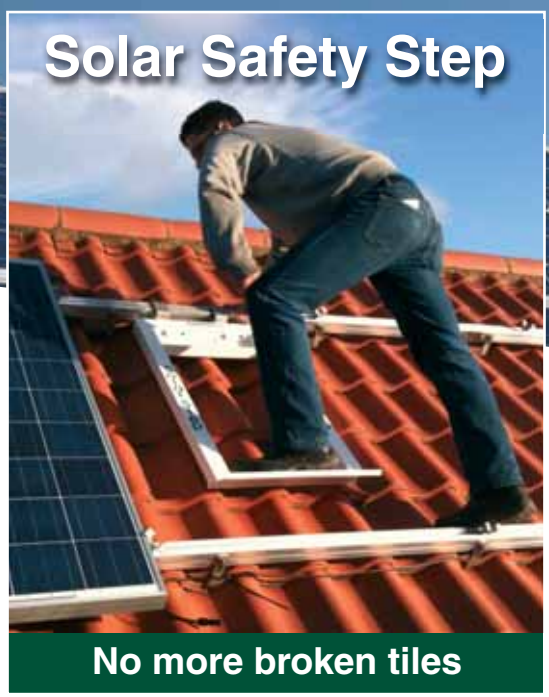

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Events

Ecobuild 2012
20-22 March ExCel, London
www.ecobuild.co.uk

Ecobuild China
9-12 April SNIEC, Shanghai
www.ecobuildchina.com

International Small Wind Conference 2012
17-18 April Glasgow Science Centre
www.renewable-uk.com/events/small-wind-conference/

Phex: Plumbing and Heating Exhibition
24-25 April Wembley, London
15-16 May Ricoh Arena, Coventry
10-11 October Old Trafford, Manchester
14-15 November Stamford Bridge, London
www.phexshow.co.uk/

Ecofair
May 1 Elland Road, Leeds
www.eco-fair.co.uk/

Greenbuild Expo
9-10 May Manchester Central
www.greenbuildexpo.co.uk/

Sustainability Live
22-24 May NEC, Birmingham
www.sustainabilitylive.com

All-Energy 2012
23-24 May Aberdeen Exhibition and Conferencing Centre
www.all-energy.co.uk/

Renewables Roadshow
13 September Ricoh Arena, Coventry
18 September Westpoint Arena, Exeter
20 September International Centre, Harrogate
26 September SECC, Glasgow
28 September Event City, Manchester
03 October Wembley Stadium, London
www.renewables-roadshow.co.uk/

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

Turbine provider picks up £5m contract

Gaia-Wind and renewable energy provider Myriad CEG Power has signed a £5 million-plus contract to provide almost 200 Gaia-Wind 133-11kW small wind turbines for installation in England and Wales, over the next twelve months. The announcement comes just weeks after Gaia-Wind won the prestigious Scottish Renewables Green Energy Award for business growth. Gaia-Wind, ceo, Johnnie Andringa said: "This is a record breaking contract for us and will enhance our position as the UK's leading manufacturer of small wind turbines. The contract, for 190 turbines, with the potential to increase to more than 200, is a vote of confidence from Myriad CEG Power: the UK's largest supplier and installer of green energy equipment. It is also a huge compliment to our turbine model, the Gaia-Wind 133-11kW, and our workforce."

Welcoming the development, First Minister Alex Salmond said: "I congratulate Gaia-Wind, together with Myriad CEG, on securing this new contract and I am pleased that the Scottish government, through our enterprise agencies, has been able to support the company's successful development from its Glasgow base.

"The latest success is further indication of the strength of Scotland's world-leading renewable energy industry, built on our strong industrial heritage and track record for innovation."

"It is an industry that is not only transforming how we generate power in Scotland, but one that is increasingly generating business, jobs and investment from around these islands and further afield."

Winning ways: Gaia-Wind has signed a £5 million-plus contract to provide almost 200 Gaia-Wind 133-11kW small wind turbines for installation

Free practical advice at Ecobuild

Ecobuild, which takes place at London's ExCeL on Tuesday 20 – Thursday 22 March, is offering installers the opportunity to get expert advice and hands-on experience with micro-renewables through a series of live demonstrations taking place on the exhibition floor, plus dedicated seminars every day. See page 54.

ecobuild
your future

Wagner Solar extends warranty

Wagner Solar UK has extended the warranty for its TRIC mounting to 10 years. PV systems must remain safely on the roof for more than 25 years to outlast the Feed-in Tariff (FiT). Throughout this period, the system must be capable of withstanding extreme fluctuations in weather, making the mounting element the most vital organ for a healthy solar system.

"The beauty of the TRIC mounting system is that all the components are pre-assembled and interchangeable with one another, providing the installer with the ultimate flexibility on the rooftop," said Jan Stasik, technical manager at Wagner Solar UK, "Installers often comment how amazed they are at how fast the rails get installed with the TRIC mounting system, even on tricky roofs," he added.

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Reid Kerr launches solar thermal course

A new addition to Reid Kerr College's suite of renewable technologies training has been launched. Open to plumbers and heating engineers, the BPEC solar thermal course delivers the skills and knowledge required to install and maintain common types of solar domestic hot water heating systems. Leading the way in renewables training and with an already established training partnership with BPEC, Reid Kerr College is offering this three-day course that is mapped against the QCF framework and as a result meets all the MCS training requirements.

Andrew Fogarty, head of energy and utilities at Reid Kerr said: "We boast a successful range of BPEC-accredited courses and we are delighted with this brand new addition which provides candidates with a full selection of programmes to choose from. In light of the current financial pressure and challenging times ahead for contractors and engineers, we have managed to access a 50 per cent funding mechanism up to a maximum of £1000 per candidate."

Training is delivered in the College's Institute of Construction & Engineering, a new £4 million learning and teaching facility. Reid Kerr can offer a range of training programmes including City and Guilds 2372 Certificate in Installing and Commissioning PV Systems, BPEC Renewable Energy Awareness Course, BPEC Solar G59/2 and NC Renewable Energy Technologies.

Warm front: The BPEC solar thermal course delivers the skills and knowledge required to install and maintain the common types of solar domestic hot water heating systems

IES unveils first franchisee

Intelligent Energy Solutions (IES), the Leicester-based renewable energy specialist, has announced its first franchisee.

Smart Renewables joined the IES group in January and will operate from Bolton, Lancashire, serving the town as well as Bury, Wigan, Preston and Blackburn. Local entrepreneur, Ken Brown will manage the franchise, which will offer the full range of IES' renewable solutions including solar photovoltaic panels, solar thermal collectors, air and ground source heat pumps and rainwater harvesting systems.

"IES is a well-established company with a good business model and sound management structure. Its ethos of adopting an advisory, educational role is what sets the business apart and this appealed to me when looking at franchise options. In addition, the team was realistic about its expectations and instilled us with confidence in their expertise and technical knowledge," Brown said.

Peter Searancke, managing director and founder of IES said: "It has always been part of the long term business development plan to expand geographically via a franchise scheme. As renewable energy becomes more prevalent, we want to offer enthusiastic professionals the opportunity to enter the sector, secure in the knowledge they will have expert back-up.

"Ken Brown is committed, reliable and passionate about a greener, cost-effective future - exactly the right profile for a franchisee."

Team work: Peter Searancke, managing director, Intelligent Energy Solutions with Ken Brown, Smart Renewables, the first franchisee to join the IES group

TGC eyes ambitious growth

TGC Renewables has announced plans to develop over 25MW in renewable energy initiatives, doubling its existing staff base in the next twelve months.

Despite an uncertain political and economic climate for the wider UK green energy sector, the renewable energy project developer connected over 2MW of wind and solar initiatives to the UK grid in 2011 and expects to continue installing onshore wind turbines at a rate of two to three units a month throughout the course of 2012.

This, combined with plans to develop a series of multi-MW solar sites located throughout the south west of England, should lead to a substantial revenue rise prompting the company's current recruitment drive.

"For the past five years, the UK renewable energy sector has been battling to strike a balance between creating the catalysts for growth and protecting the long term interests of the clean energy sector," said Ben Cosh, director of TGC Renewables.

"However, as the government starts to provide greater policy clarity, the industry can raise company revenue targets and offer increased levels of energy stability in the future.

"For TGC Renewables, this is critical, since it enables us to work directly with both the investment and agricultural communities while at the same time continuing to invest in our existing staff base – a workforce that we expect to double within the next twelve to eighteen months."

Doubling up: TGC's Ben Cosh plans to increase the company's staff base two fold

Opportunity knocks

Installers should not feel disheartened by the coming of the Green Deal, says **Garry Worthington**, head of Green Deal at Climate Energy, but should act soon to benefit from the opportunities it will bring

In October this year the framework for the energy efficiency market in the UK will change beyond recognition thanks to Green Deal, a financial mechanism which will eliminate the need for homeowners to pay upfront for energy efficiency measures. It is hoped this will see an increase in homeowners making efficiency improvements to their homes and a reduction in the amount of carbon emissions from homes in the UK.

The Green Deal is part of the Energy Bill which became law in November 2011, and brings to an end "top-down" schemes such as Warm Front, CERT and CESP and will instead see energy efficiency in the UK funded and managed by private companies and consortiums.

The Green Deal will allow homeowners and businesses to carry out a full energy efficiency refurbishment of their property without any upfront costs, paid back over a period of time up to 25 years. What's unique about Green Deal is that the loan will be lodged against the property, not the homeowner or business and repayments will be made via the property's electricity bill by whoever pays the electricity bill, which could be subsequent owners of the property or could even be tenants.

Plus points: Garry Worthington, Climate Energy, highlights the merits of the coming Green Deal

The golden rule

However, thanks to the 'Golden Rule' of the Green Deal the charge collected through the electricity bill will be no greater than the expected savings estimated during the initial Green Deal process.

The Green Deal will be supported by a new Energy Company Obligation (ECO) which will focus on meeting the needs of lower income households and the most vulnerable as well as those properties needing measures that do not meet the Golden Rule, such as solid wall insulation.

So what does this all mean for installers? Green Deal offers a massive opportunity for all trades associated with energy efficiency, environmental management, assessing, surveying and installing. Green Deal will encourage home owners to improve the energy efficiency of their homes, and make it easier for them to do so, boosting the industry in the UK. By the end of the decade, the government estimates that private sector companies will have invested £14bn in the scheme and the new ECO alone is worth £1.3billion a year.

Above all, both Green Deal and ECO are simply frameworks for publicly-funded measures. Regardless of how small your business is, everyone in the industry can help to shape these frameworks over the next decade, and play a huge role in transforming the energy efficiency market in the UK.

Training is key

But, while the opportunities are massive, installers will need to make changes to the way they operate to benefit from the investment that will be made. To undertake work funded by the Green Deal, installers, assessors and scheme providers will need to be certified and this will involve training and maintaining skills and enhancing current levels of workmanship, quality and customer service – all of which may have a cost implication. UKAS, the Green Deal accreditation body, has yet to announce the accreditation bodies responsible for training and approving installers. As a result, installers cannot yet book on to any training courses, so it's expected a flood of companies will want to join courses in summer this year so that they are fully certified for the launch of Green Deal.

Even when certification is achieved, installers will still have to adapt the way they work. Previously funding has been made available through Warm Front, CESP and CERT – guaranteed forms of funding – but installers will now have to pitch their business directly to homeowners. Standing still and not embracing Green Deal is simply not an option.

But installers should not be disheartened by some of the changes they will have to make. While preparing for the launch of Green Deal may seem a daunting process, the potential for financial rewards for the industry as a result of the initiative is massive. Installers just need to make sure they are ready for the October launch if they don't want to be left behind.

Job centre

The number of solar jobs available in the UK, career trends within the solar industry across the globe and the roles and responsibilities of solar professionals who are in demand, has fluctuated throughout the year. **Vicky Kenrick** at sustainability recruitment specialists, Allen & York, looks at current career trends within the UK solar industry

From April 2012, householders will have to meet a certain standard of energy efficiency before they can be eligible for Feed-in Tariff (FiT) subsidies for the power produced by solar panels.

There are also mixed messages coming from the government regarding the extent of their future commitment to solar power in the UK. Although Greg Barker, the minister for Energy and Climate Change said the government wanted growth in solar panel installations to continue and proclaimed that he is, "personally committed to ensuring that the solar industry can prosper in the longer term, sustaining green jobs at a critical time for our economy," there are still doubts amongst industry experts who fear that cuts will be too deep to allow companies to remain profitable, potentially hindering the UK's solar job boom.

Huge potential in solar

The rise in the number of solar jobs available in the UK between 2010 and 2011 does clearly demonstrate the original success of the FiT in creating jobs. Analysis carried out by REA shows the number of people working in the UK solar power sector has jumped by 22,000 to 25,000 over the last 18 months and could reach 32,000 by April 2012. REA said the solar jobs figures were a bright spot in an otherwise gloomy economic outlook that underlined the overall success of the FiT.

However, latest evidence from REA and the Solar Trade's Association's (STA) Solar Survey demonstrates how the cuts to solar subsidies are leading to job losses. The survey of 140 companies (4,055 workers) taken before the FiT cuts, found that over half (56 per cent) planned to reduce their workforce once the FiT cuts went ahead. Key findings also show that 33 per cent of companies fear closure and 90 per cent say cuts are too deep and too fast.

Job opportunities in the solar industry are being created in the US and China – nations where the solar industry is extremely competitive. The US and China are currently undergoing a solar trade war – in which some companies from China are exporting solar panels to the US below cost price in order to drive out their competitors. This has been criticised as damaging the US economy. Global solar industry competition is driving down cost and this in turn is creating thousands of American jobs. Jigar Shah, founder of SunEdison said: "Further price declines driven by intense competition will only grow more new jobs throughout the solar value chain – especially in the US."

Solar job opportunities

International Sustainability Recruitment Consultancy, Allen & York specialises in recruitment within the renewable energy industry and despite the FiT changes, has an increasing number of job opportunities within the solar industry throughout Europe and worldwide. Barbara Baran–Szlajnda, solar recruitment consultant at the company commented: "Whilst 2012 will be tough for the solar industry, we do see a return to growth, within Europe, as a result of demand from the US, China and Japan. As global installations grow, due to cost decreases, it is likely we will continue to see jobs opportunities for solar professionals in Europe, specifically in the roles of project manager, technical engineer and solar sales executive."

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* In a long-term study conducted by the Fraunhofer-Institute the SCHOTT Solar modules still achieved over 90% of their original performance even after 25 years.

whatever the future holds.

Care for the community

In a recent issue of REI, Howard Johns of Southern Solar described the Ovesco community solar roof project in Lewes, as an example of the kind of initiative that has been hit hard by the proposed changes to the Feed-in Tariff. **Liz Mandeville**, a director of Ovesco, spells out what this means

We completed and registered our 98kW roof last August. No Feed-in Tariff (FiT) payment in sight, but our most serious problem was the uncertainty over the future of the FiT for solar. Community projects don't give investors any direct financial benefit. Our evidence shows that community benefit is the main motive for investing, but there are lots of ways to benefit a community that don't require large sums of money, so we have to include interest payments in our planning. The earlier FiT enabled us, to maintain the system, pay interest and a modest return on investments, and have a small sum for administration and development.

The reductions in the FiT, on the most optimistic assumptions, just about make a project break even, but leave nothing to pay investors and for the continued existence of Ovesco. We have two good 30kW projects ready to go, but will probably have to abandon them. We could have completed them by the March deadline, but the back-dating of the new FiT has made this impossible.

The government, with its series of appeals, is using up the narrow window in which we could have done something more. If it loses in the final stage of its legal battle then, organisations like Ovesco should be given equivalent time to that lost in litigation before the new rates apply, to carry out projects that could have been completed within the original consultation period. At the moment, it's a case of heads, the government wins, tails, community solar loses. In the longer term, communities, people employed in the solar business, individuals - every one loses from this cack-handed policy making. Hard to feel that anyone in government actually cares about climate change.

Tough times: Those involved in the Ovesco solar community roof project. Photo courtesy of David McHugh

Isle of Man set for multi-million pound renewable windfall

The **Isle of Man** is looking to cash in on an ambitious renewable energy programme following a remarkable decision to surrender its share of the UK's oil and gas revenues.

The Manx government wants to harness the green potential of the island's unique position to attract a new era of clean energy generation and export 10 times as much low-carbon electricity to the UK as the entire island consumes in a year.

A decision 20 years ago to surrender its share of UK's fossil fuel revenues in return for its territorial waters looks like a multi-million pound wager that is destined to pay off.

A gamble that may have appeared madness at the height of the scramble for oil and gas now looks a remarkable crystal-ball policy call as the independent crown dependency prepares to lease off small areas of its seabed for massive returns.

The agreement in July 1991 ended a 25-year deal that saw the Manx Exchequer receive a share of the royalties and rentals from oil and gas exploration from the whole of the UK continental shelf. The Isle of Man had agreed to shrink its territorial waters from 12 to three nautical miles and give up any interest it had in oil and gas exploration and production in the Morecambe Bay area.

Boost in value

With the reversal of the 1966 accord, the island now controls around 4,000 square kilometres of territorial waters, which the drive to low-carbon, sustainable power generation has boosted in value to an estimated £8 million per square kilometre over 25 years .

An environmental report to be completed in April may suggest the Isle of Man currently has the capacity to utilise several hundred square kilometres of seabed, which still has the potential to provide a huge return on investment.

The island is well set up for the trial and research of low-carbon technology

A 80MW gas turbine power plant alongside a 10MW waste-to-energy facility already enables the island to be a net exporter of electricity to the mainland.

But with shallow waters, strong currents and no shortage of wind, the island's renewable capacity appears perfect for the installation of tidal, wave and offshore wind installations.

And with zero corporation tax and a swift planning decision-making process, the island will may soon be looking to lease areas of suitable seabed to energy companies to generate and sell on to the mainland.

The infrastructure is already in place to transmit electricity to the UK and a sub-sea interconnector to the coast of Blackpool hooks directly into the National Grid.

A Strategic Environmental Assessment report is expected to be completed this spring, which will then signal the move to attract offshore wind generators as well as marine energy pioneers.

The Isle of Man has been a test-bed for many technical innovations and roll-outs. The 3G mobile network was first introduced on the island before it was rolled out across the UK.

TT goes green

And the world-famous TT motorbike festival is already going green following the introduction of the TT-zero event for electric-powered

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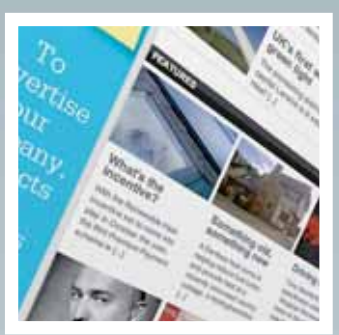

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Aiming high: The Isle of Man aims to produce 15 per cent of its electricity from renewables by 2020

motorbikes – this year will likely see the landmark record of a 100mph average circuit speed achieved by an electric model.

"More than 87 per cent of the Isle of Man territory is offshore," said Dr Ken Milne, senior manager for energy policy at the Isle of Man Government. "We have the capacity and the capability to be generating thousands of megawatts of renewable energy to feed into the UK National Grid.

"Our territorial waters are the equivalent of Rounds 1 and 2 of the Crown Estate leasing programme for offshore wind farms – most of our water is shallow and we have perfect wind conditions.

"Our close proximity to the UK allows a more cost effective interconnection than many other new offshore wind farms around the UK coast and we have the precision manufacturing supply chain already in place on the island.

By 2015, we aim to produce 15 per cent of our electricity needs from renewable sources

"By 2015, we aim to produce 15 per cent of our electricity needs from renewable sources and by 2020 we may be able to supply 10 times as much low-carbon electricity to the UK as the entire island electricity consumption in a year .

"The island is well set up for the trial and research of low-carbon technology, we have manufacturing companies on the island that specialise in the aerospace industry supplying Boeing and Airbus and the optics for the Mars Explorer mission were manufactured on the Isle of Man.

"We are a signatory of the same intellectual property rights treaties as the UK and the rest of Europe, which means all royalties and revenues from IP is zero-rated for tax."

The island is also working on developing smart grid technology and is perfectly positioned in the middle of the Irish Sea to connect Ireland, Scotland, England and Wales, which could create the blueprint of a much larger, pan-European smart grid model.

Dr Milne added: "We are investigating opportunities to become a major net exporter of renewable energy and we have the capacity, skills and infrastructure to achieve it.

"We are looking at other countries such as Scotland for offshore renewables and Singapore for smart grid technology to see how the Isle of Man can best support the role of these low-carbon technologies.

"The island's peak demand for electricity is 90MW so everything we can generate above this and our base load of 40MW can be exported straight to the UK.

"Our energy-to-waste plant already enables the island to divert 100 per cent of domestic waste from landfill – the next big opportunity to help reduce our carbon footprint is from the renewable energy produced from our territorial waters."

Fighting talk

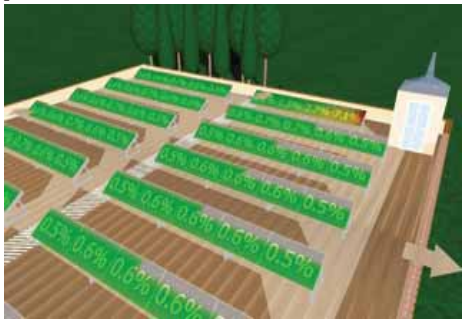
During 2011, the competition between solar thermal and solar PV barely existed. PV simply won due to a generous Feed-in Tariff (FiT) but with the recent introduction of the Renewable Heat Incentive (RHI), md of the Solar Design Company, **Chris Laughton**, explains why this choice now deserves greater attention

The problem in today's crowded buildings is firstly, finding the best position to fit solar collectors of any kind and secondly, deciding which of these two technologies gets priority.

Correct position

The 'fight' for roof space grows more significant every year, not only as equipment becomes more affordable but also because optimum locations are first occupied by other equipment. This can include roof skylights but also flues, extract ducts, air conditioning and aerials. Such equipment not only reduces the available roof area but can also cast shadows that reduce the performance of solar equipment. Shading has a particularly strong effect on PV with even small shadows causing significant losses. These are particularly prominent when the sun is low in the sky, such as during winter or at high latitudes such as in Scotland.

In order to correctly position solar collectors, consideration must be given to the daily sun-path between sunrise and sunset. This sun-path alters seasonally according to the latitude of the location. There are also local climatic conditions to consider – perhaps morning mists or afternoon thunderstorms predominate.



Out of the shadows: Shading frequency anticipated using PV*SOL simulation software

Into the light: Survey tools are used for accurate measurements of property and shading risk

Computer simulation

Professional solar engineers now use computer simulation software to work out the best use of limited roof areas. This allows for rapid calculation of the total annual energy output from each hour during the year. Good quality software programs allow for comparison between different brands of equipment and user load profiles. Separate programs are used for solar water heating and PV because they are two fundamentally different technologies. For example, the conversion efficiency of solar radiation to thermal occurs at a much higher rate than it does for conversion to electricity. Also, heat is usually stored in water whereas electricity is either sold straight to the utility grid or occasionally stored in batteries. It is important not to underestimate the effect of changing loads on domestic hot water heating or the existence of off-peak electric supplies. The end-user alters their patterns of use to optimise solar contribution; however, it is unlikely that this will be retained through building ownership changes. Professional simulation software can visualise each of these situations and present a clear cost benefit interpretation to clients.

The 'fight' for roof space grows more significant every year

Accurate measurements

To increase confidence in simulation results, any engineer should be prepared to reveal their assumptions for scrutiny. This is why there is no substitute for an accurate on-site survey to measure and record values. Where a roof becomes crowded, the more efficient solar products are likely to be prioritised in order to give the smallest footprint. A variety of on-site tools are available to measure potential sites. These can be used from the ground and are an ideal accompaniment for accurate computer simulations. These tools rapidly digitise the surrounding landscape, storing the results in a computer or transmitted by GSM back to the office. This can be turned into 2D or even 3D animated shading, greatly enhancing the design experience.

For the right site, investments in solar energy can still provide far greater returns than bank interest rates. Using either technology, a rate of return greater than 5 per cent can reliably be expected on commercial premises.

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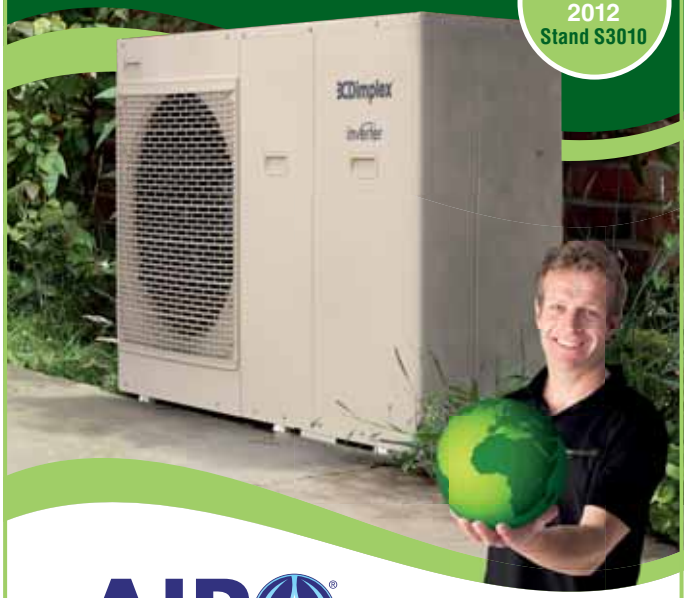

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Help! I need somebody

When Michael Tyas, managing director of Tyas Heating & Gas Services, revealed he had experienced difficulty accessing help from a heat pump manufacturer, REI was intrgued. **Lu Rahman** reports

According to Tyas, the letter from the air source heat pump manufacturer, set out five rules, contravention of which would lead to a "three strikes and you're out" policy. Said Tyas: "One of the five rules, which are a testament to the lack of understanding and appreciation of the installer by the manufacturer, states that if the installer contacts the help line excessively, this will lead to a three strikes and you're out scenario. I can only assume that you will be kicked off their list of approved contractors and be removed from the website?

"This is a manufacturer which supposedly only sells its product to installers that have been trained on the company's bespoke level 1 and 2 training courses. This is at a cost to the installer, who has to achieve a pass mark of 90 per cent. They are now saying don't bother us with your problems or technical issues and certainly don't bother us more than once?"

Tyas has been involved with heat pump design and installation for many years and highlights the fact that some projects can require a little more in-depth design and planning from all parties before a acceptable concept can be completed. "It is never the case that one unit fits all," he said, adding that this manufacturer is discriminating against the installers that need a little more help when dealing with heat pump technology.

The manufacturer that Tyas is discussing is Mitsubishi Electric. John Kellett, domestic heating general manager, explained the letter sent out by the company states that "strikes" can be obtained for various reasons, one of which is "making repetitive or excessive calls to the Helpdesk indicating inadequate training."

Kellett explained: "There is absolutely no limit on the number of calls an installer can make to our Helpdesk and last year we answered over 7,000 calls from Approved Ecodan Installers (AEIs). However, we do reserve the right to act if people are calling the helpline rather than undergoing appropriate training."

Mitsubishi Electric provides comprehensive training in how to size and correctly install its products and all installers will have undergone training and signed terms and conditions so that they are aware of the qualifications they need to have.

"A few AEIs have been resistant to product training," he said, "and that's what's behind this. We continually monitor the call process and this clearly shows that a minority of installers want to use the helpline instead of training. That's what we are trying to stop.

"We offer immense support

to our AEIs, including our deal through NAPIT so that they can become MCS accredited. Being an AEI has many advantages, one of which is the telephone support and the relationship development program we offer."

He added that Mitsubishi Electric has only received three complaints about the letter. "I would like to extend an invitation to the installer that contacted you to get in touch with me and we can discuss his complaint."

Tyas said he would get in touch but wonders would he be classed as "using the contact line excessively and therefore on the road to his first strike? And, he adds, how can you become an AEI if you're "resistant to product training?" Manufacturers, he said, should never seek to alienate installers large, small, good or bad for any reason - but should seek to educate them warts and all.

What do the other heat pump manufacturers think?

Mark McManus, managing director of heat pump manufacturer **Stiebel Eltron**, commented: "Stiebel Eltron UK's helpline is available both to installers and end users at all times – the aim is to ensure that the customer has as much help as they need to maximise the efficiency of their product and we have no problem with repeat calls.

"It is quite the opposite of curbing 'excessive use' and we certainly would never entertain the idea of telling a customer how many times they may or may not use our helpline services."

Andrew Grimsley, technical director of **Nu-Heat Underfloor & Renewables** said: "Nu-Heat takes technical support seriously. This is a fledgling industry and if it is to reach its full potential suppliers need to protect their reputation, with both installers and end users, by making sure products live up to expectations, which can only happen if they are installed correctly. Currently, a Nu-Heat engineer visits every heat pump installation to help with commissioning if needed and/or support the installer with some on-site training. Telephone support is free and on-going for all Nu-Heat products, regardless of how many calls are made."

Garry Broadbent, **ICS Heat Pump Technology**, said: "The heat pump is a relatively new product to the UK heating sector and as such there will be teething problems with regard to installer knowledge and experience and to the way that the units are specified and installed.

"This means that the demands of the industry will be higher than with conventional heating equipment in terms of the required support from heat pump manufacturers and suppliers. But as long as the basics are dealt with at the first stage an installer enters the heat pump market the amount of on-going support should be minimised as the installer/specifier becomes more experienced.

"The future support required from the heat pump manufacturer should then be maintained at an acceptable level, however it must be noted that each manufacturer/provider should understand the important part that they have to play when supplying heat pumps into the UK market as all companies must have the common objective of increasing specification and installation standards by increasing installer knowledge."

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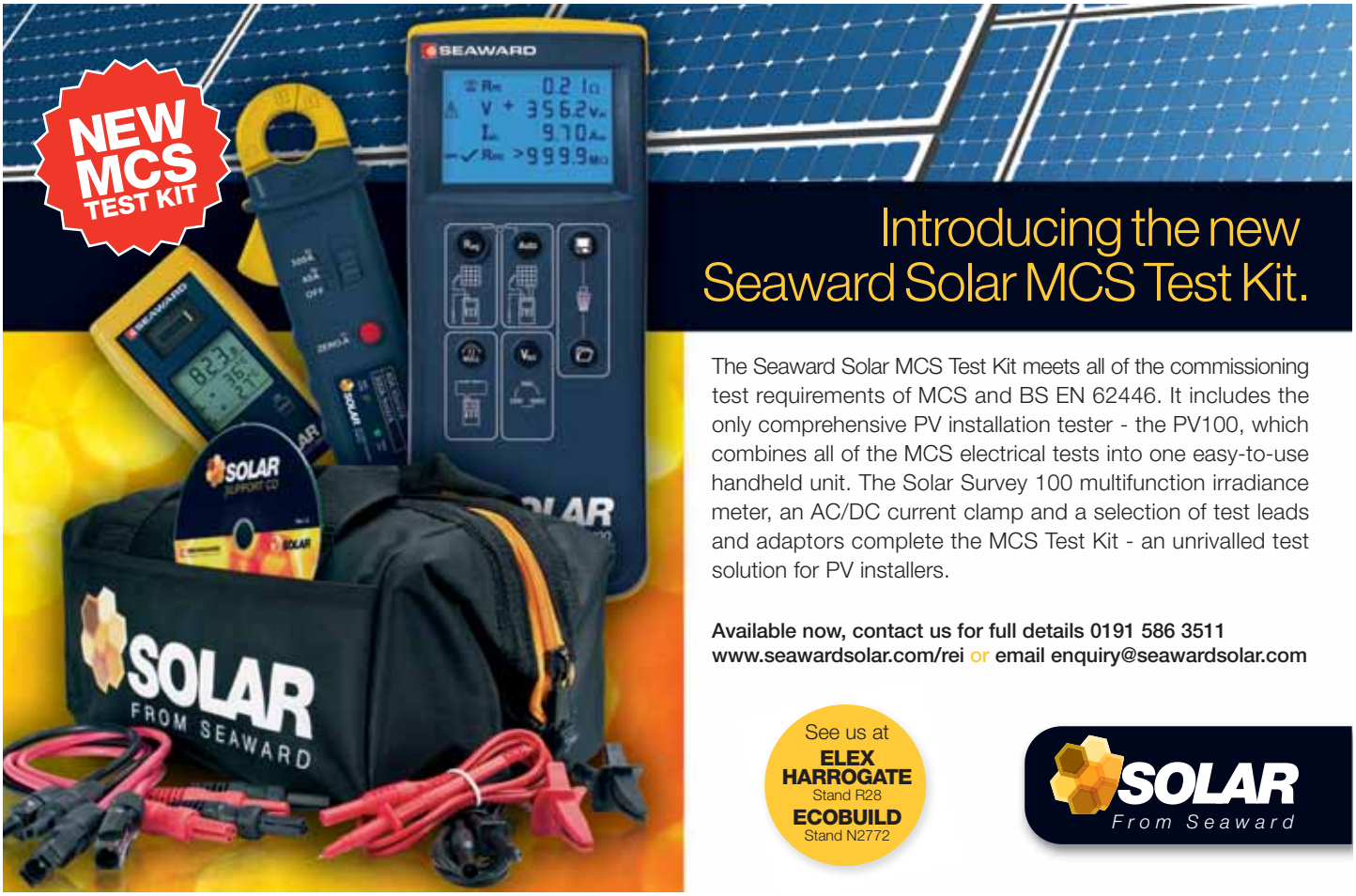

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Vorsprung durch Technik

With a strong German manufacturing pedigree and ambitious plans for growth, **Robert Markus Feldmann**, Azur Solar, discusses why his company is perfectly placed to serve installers throughout 2012 and beyond. Paul Stephen explains why

'Vorsprung durch Technik' may be the famous strap line of renowned car manufacturers Audi, but it is a motto that could just as easily be applied to fellow German company Azur Solar and its managing director, Robert Markus Feldmann.

Translating to 'progress through technology', the tagline seems appropriate for a man who plans to attract PV installers to become partners through the quality of its newly expanded module, inverter, kit and component product range – in particular for the 2P coated premium modules – plus a well-established reputation for technological excellence from his native Deutschland.

"We have about 300 installers signed up as members on our webshop and on our database and we aim to grow that base to 1,000 this year," he says with confidence. "For 2012 we plan to at least double our revenues. We think a turnover of £20m is achievable."

Feldmann is inviting installers to sign up to the 'Azur 2P Quality Dealer Programme' in order to have access to the company's flagship product – the Azur 2P coated PV module – and the expanded range of other components including mounting systems. According to Feldmann, the 2P module is a leap forward in PV technology as its patent-pending coating limits degradation to two per cent over 25 years and deliver up to 12 per cent more power over its lifetime.

He adds: "In a nutshell, installers work with us because they love this product. They clearly understand that if they go out and have to pitch alongside ten other products that they have a good chance with the unique 2P coated module.

"One thing which is unique is the patented coating on top of the module. Azur Solar has perfected this technology that coats solar PV modules. Coating modules is a relatively low cost way to obtain superior performance from quality standard modules. Currently, the coating is exclusively applied to Azur Solar modules and cannot be had with any other module on the market. The proprietory Azur Solar 2P coating has a range of beneficial properties, the prime one being an 'anti-aging' effect, allowing the company to warrant the modules at 98 per cent after 25 years versus the industry standard 80 per cent.

Aiming high: Azur Solar md, Robert Markus Feldmann, intends to double the Slough-based company's annual revenues to £20m

"The Azur Solar 2P module was first launched in October 2010 in the UK and since then has seen a very strong pick-up in demand, forcing an early expansion of production lines in Germany. The premium product approach is supported by the '2P Quality Dealer Programme' where dealers have to commit to accepting our high standards and quality.

"Having a German pedigree also equals trust as the customer has a perception of what German engineering is - like cars."

Interested installers are invited to attend scheduled training events and seminars at the company's Slough premises where live demonstrations outline the benefits of using Azur's products and becoming a partner. Feldmann says that some of the key attractions to installers who already use Azur as a supplier include this training provision plus a the new online ordering possibility via the Azur Solar Webshop and the company's flexible delivery policy.

He adds: "What makes us so valuable to installers is that since the early days we have been giving hands-on advice. We had the know-how from operating in Europe's largest solar market (Germany) so we didn't just supply the product but also engineering support and advice.

"Our online shop opened before last Christmas. Our installer partners like it as it's easy to use and has the full product range, providing a complete overview of our catalogue at a glimpse plus allowing to process payment online right away. All users need to be MCS registered and receive a personal log in. Once logged in, users will automatically be quoted their respective price and discount levels, which are not reflected in the publicly available version.

"A particular feature are the Azur Solar Power Kits, which come in over 40 variations currently. True to our 'just in time' concept, we shall also deliver to designated addresses so the installer doesn't have to hold any stock.

"I would say that we are willing to go the extra mile for the installer to accommodate his specific needs. Other suppliers might say 'yes we will deliver to the site but a minimum of ten kits' whereas we have a relatively flexible policy."

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Looking ahead

Ecoskies urges installers to prepare for the future of FiTs and RHI and says the EPC is no barrier to making the most of PV and heat tariffs

By passing the Climate Change Act 2008, the UK government pledged to reduce greenhouse gas emissions by 34 per cent by the year 2020, and 80 per cent by 2050. Lauded at the time as a forward-thinking and bold piece of legislation, it was left for the future to determine how these goals were going to be met.

Skies the limit: Brett Pearson, Ecoskies. The company is offering a three-day ABBE accredited domestic energy assessor (DEA) training course

In 2010 the Department of Energy and Climate Change (DECC) introduced generous solar PV feed-in tariffs (FiTs) as one of the first steps towards meeting the low-carbon obligations of Pathways 2050. However, in October 2011 DECC announced massive cuts to these FiTs after realising that the applications for the tariff were far outstripping projections. The resulting outcry from the solar PV industry, the plummet of trust in the government's ability to manage the scheme, and the inevitable lawsuit comprised a debacle of DECC's own making. This misstep was borne not of ill-will by DECC for the solar PV industry, as some have wondered, but out of inexperience in guiding such an ambitious programme through what is virgin regulatory territory.

As DECC's experience grows and it learns to manage renewables incentives more deftly, it will continue to fine-tune tariffs and regulations. Along these lines DECC has made clear its intention to make the Energy Performance Certificate (EPC) an ingredient to qualifying for full tariffs (or any tariff at all). It is well and good to adopt renewable energy systems, after all, but it is not in the spirit of the plan to let that valuable clean energy just fly out the window.

While the new Renewable Heat Incentive (RHI) has no EPC requirements in its first phase, it is highly probable that the second phase will require a certain EPC level to qualify for the tariff.

EcoSkies has anticipated these changes by rolling out a new three-day ABBE accredited domestic energy assessor (DEA) training course. Brett Pearson, business development manager of EcoSkies, said: "Beyond low energy lighting, relatively little can be done electrically to improve the energy performance of a home. The same cannot be said for space heating and producing hot water. In fact, there is plenty you can do just using the 'insulate before you generate' rule. We have the Green Deal for that, which is being launched hand-in-hand with Phase 2 single-domestic RHI. It stands to reason then, that if Greg Barker is hell-bent on bringing in EPC requirements for PV, it would be entirely contradictory and inconsistent for there be no EPC requirement on Phase 2 RHI payments."

A different approach

Solar energy experts say it is cheaper for solar PV owners to use their harvested power rather than selling it back to the grid under the current arrangements. **Mark Elliot**, Energeno, explains

The current political and legal uncertainty surrounding solar PV Feed-in Tariff (FiT) payments is overshadowing the practical benefits that householders can derive from their rooftops, according to energy monitoring experts Energeno.

The company, a global distributor of the Wattson Solar Plus energy monitor, argues that solar PV users should focus upon the benefits they can receive today, rather than concern themselves with activities in Parliament and the High Court.

Tips for homeowners for getting a better financial return on their investment is to strategically use the electricity generated, rather than selling the excess back to the grid, although the export tariff 3.1p/kwh was viewed by many as a longer-term benefit to homeowners.

Mark Elliott, a director at Energeno, says homeowners can save more money this way.

"Those looking to make the best returns on their solar investment should make use of the harvested electricity generated, rather than selling the excess back to the grid. Use high power appliances when the sun shines rather than at night, switch on dishwashers, washing machines and storage heaters for daytime rather than night," he says.

Elliott adds: "Selling energy back to the grid was a central plank of the argument to invest, and it still can be. However, for householders to get faster and better pay-back, they must take true control of their outgoings and have a more intimate knowledge of the household's heavier energy use, such as winter heating and drying. Tapping into any harvested excess to offset that cost, is a better use of the free energy.

"Irrespective of the solar PV FiT, these are practical householder tips that can help consumers maximise the leverage from their investment. New investors must also remember that they can benefit from the huge reductions in the cost of solar panels – up to 70 per cent in some instances. People smile when the sun shines and this combination of cost reduction strategies must be taken into consideration for the bigger picture view of the renewable industry," he concludes.

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Talking Ten to the Dozen

Leading renewable experts reveal their opinions

What will you be heading for at Ecobuild 2012?

Kamil Shah, **Wagner Solar**

"The solar PV market has been in a state of confusion. Our company's brand values have been built on delivering quality and imparting knowledge to the industry, so, we will use Ecobuild to educate solar installers on market opportunities and how to maintain good working practice so they can sustain their business and maintain the quality of their work. We will also play our role in contributing to a sustainable and long-term industry."

Steve Griffiths, **Tritec**

"Ecobuild is key event in the 'green calendar' because it reminds us of the importance of prioritising innovation in the energy-efficiency arena. The adoption, acceptance and deployment of innovative technology is a key step towards a low-carbon Britain. Tritec has therefore chosen EcoBuild to showcase such its latest innovations: TRI-KA, TriStand and EVALO."

David Lowen, **Power One**

"Ecobuild is a great exhibition for highlighting the growth of renewables in our daily lives. As one of the world's largest manufacturers of solar inverters, it's important to be able show the many hundreds of installers and developers the benefits of Power One's new world class residential and commercial inverters."

Neil Young, **Uponor**

"We have seen a huge increase in demand for renewable energy solutions and have introduced air source heat pumps to our product offering. Ecobuild is the ideal platform for communicating the benefits of combining heat pumps with underfloor heating and we are very excited about the Practical Installer Area where we have an opportunity to bring our products to life."

Harald F. Schaefer, **Sunways**

"Integrating PV into architecture is key to meet the world's future demand for energy. This refers to both private homes leading to improved energy efficiency as well as public and industrial buildings with the potential for large-scale solar facades. Sunways provides design-oriented PV solutions therefore, Ecobuild is the ideal platform for us."

David Spragg, **Wilo**

"We see EcoBuild as a vital showcase for the products we offer and an excellent opportunity to meet a large proportion of our customers face to face. We will take the opportunity to introduce visitors to the show to a number of new products that will be available here in the UK."

Andy Sharp, **NAPIT**

"Anyone involved in the renewable energy marketplace or relative trades should highlight Ecobuild in their business calendars. NAPIT welcomes installers of all renewable technologies from across the UK, to discuss anything from industry updates and regulation changes to our extensive range of services and exclusive NAPIT discounts."

Daniel-Jenkins Ferguson, **NICEIC**

"Ecobuild is a great exhibition because of the variety of people you get to speak to. We are able to discuss the opportunities with installers from all sectors including electricians, plumbers and gas engineers who are all keen to diversify into renewable technologies."

Babak Daemi, **Ploughcroft**

"The most exciting thing about Ecobuild this year is the Practical Installer stand. Plumb Center did a fantastic job of this last year and I am interested to see what they do this year. And of course the REI drinks event on the 21 March promises to be a great do."

Nick Keighley, **Solarlec**

"We are going to Ecobuild to further our presence in the renewable sector. Already established as one of the leading installers of PV in the north of England we are looking for opportunities to diversify into other renewable technologies as well as exploring openings in the energy efficiency market."

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

Heat pump MCS standard - time to upgrade

Steve Pester, BRE, discusses the revised heat pump standard

At BRE, the overwhelming majority of MCS-related complaints we receive are from members of the public regarding their heat pump installations. Thankfully, that may be about to change as the revised technical standard for the installation of heat pumps (MIS3005 V3.1) has just been released – and it should not be underestimated. The new revision is much more detailed than previous versions and requires a higher level of system design knowledge by installers.

More experienced installers will be able to cope with the increased complexity, but even they may need to upgrade their design and installation processes as there are some innovative approaches within the standard, and MCS assessors will need to see evidence that they are being followed.

Unusually, some examples and guidance are included in the document, which help to clarify the design methodology, and there are some useful on-line training modules at: www.microgenerationcertification.org/installers/installers/decc-heat-pump-training-road-show .

However, many of the less experienced installers may also need to get some live training or team up with one of the more established companies, as the depth of knowledge of system design now required is significant.

Version 3.1 was published on 1st Feb but the timing of the introduction of the standard has recently been changed in order to allow certification bodies and installers a little more time to prepare: all new quotes and orders must be compliant from 1st March, and certification bodies are required to use the new version for assessments from 1st April. See MCS document "*MIS3005 V3.1 Important Information*" on the MCS website for further details.

Some will no doubt regard the new requirements as a new burden on their businesses, but it is clear that installation quality needs to improve for the sake of the industry as a whole, and in the medium to long term, the standard may even help the UK to become respected world-wide for its heat pump expertise and high quality installations.

If you are interested in MCS certification of products or installers, please see **www.greenbooklive.com/microgen**

Raise the standard: Steve Pester says that whilst many experienced installers will be able to cope with the increased complexity of the new heat pump standard, even they may need to upgrade their design and installation processes

Q&A

Terry Skee

Cleaner Air Solutions

REI: What have you got planned for this year?

TS: We radically revamped this year's business plans after the solar Feed-in Tariff cuts on 12 December. Having expanded our already extensive offering of renewable energy technology solutions, we plan to compete in new sectors to challenge the difficulties to come in the year ahead.

As our logo states 'Clean Energy For Eons To Come' – the future is bright – and not just for solar.

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

TS: We firmly believe renewable will see a shift to multiple technology installations – with solar PV still playing a key core role within this. Heat pumps are undoubtedly one of them, but there are others not known as well, such as micro CHP which will also start to play its part.

REI: How is your own company cutting its carbon footprint?

TS: By practising what we preach. We have installed solar PV on all of our buildings, our fleet of vehicles comprises of both all-electric Nissan Leafs and the Honda petrol electric that we have also converted so it runs on LPG as well.

Terry Skee is commercial director, Cleaner Air Solutions

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"The rollout of the Green Deal and the Green Investment Bank will be key events in the 2012 calendar" P33 Nathan Goode, Grant Thornton

The weakest link

Neil Schofield, Worcester, Bosch Group is concerned that commission-based assessors might be tempted to mis-sell Green Deal finance package

The government has been warned that commission-based assessors might be tempted to mis-sell Green Deal finance packages. The warning, from Worcester, Bosch Group, is contained in the company's Green Deal consultation submission which was handed into the Department of Energy and Climate Change (DECC) just before the 18 January 2012 deadline.

In its submission, Worcester, Bosch Group, voiced fears about mis-selling and the independence of assessors, particularly those with ties to retailers.

Neil Schofield, head of government and external affairs for Worcester, Bosch Group, says the potential for mis-selling is a real concern across the industry.

"There are growing fears that assessment is the potential weak link in the Green Deal. We don't want to be in a situation where homeowners are taking out Green Deal finance packages expecting a £50 monthly reduction in their heating bills to cover their loan, but are ultimately only saving £30, leaving them £20 out of pocket."

Independent thinking

Schofield says the issue of assessor independence is critical. "We can envisage a situation where homeowners are offered vouchers and other deals by assessors as an inducement to sign up for a Green Deal finance package. We have concerns over the potential effect of commission derived from product or technology choice on the independence of the assessor, along with any ties he or she has with a particular provider."

He continues: "Unless the customer pays the full cost of the assessment upfront there will always be the risk that organisations will subsidise the assessment cost in order to influence the assessment. In this area the credibility of the Green Deal is potentially at stake."

We have concerns over the potential effect of commission derived from product or technology choice on the independence of the assessor, along with any ties he or she has with a particular provider

Quality concern

Worcester has also raised concern about the quality of the assessors and their ability to access specialist support when required.

"We are already hearing anecdotal evidence of homeowners being advised to install cavity wall insulation on unsuitable properties. Our view is that government needs to concentrate on regulating the quality of the assessment work. A standard assessment will be satisfactory in most cases but it is critical that the assessor is able to access specialist technical support if it is required."

Schofield also believes that installers must play a central role in the implementation of the scheme. "If the Green Deal is just about the big six utilities and the big high street retailers then the installer will be marginalised from the process. Homeowners still go to their installer for advice on heating their home, not utility companies, not heating manufacturers and certainly not retailers. If this is going to work then we need installers to be championing the Green Deal not relegated to the sidelines."

Cause for concern: Neil Schofield, Worcester, Bosch Group, highlights the potential for mis-selling with the Green Deal

In this area the credibility of the Green Deal is potentially at stake

Pollard's Patter

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

The seasonal break provides an opportunity to reflect on the past 12 months and 2011 was dramatic to say the least. We saw highs and lows and faced up to challenging economic circumstances leading to the demise of some familiar names.

So what of the year ahead? The Green Deal is due at the end of 2012, with PV, solar thermal, air source and ground source heat pumps, biomass and micro CHP listed as 'qualifying improvements'. However, under the current proposals, it is far from clear whether microgeneration will allow customers to combine incentives such as the Feed-in Tariff and RHI with Green Deal Finance. This is likely to seriously impact on uptake, as is the concern about the potential for SMEs to participate . All businesses, regardless of size, need to be involved if we are to deliver emissions reductions.

We can also look forward to the consultation on Part L, more details of RHI and 'Allowable Solutions' for Zero Carbon Homes. So 2012 is already set to be another landmark year and Ecobuild (20-22 March) will definitely be a focal point. Once again Plumb Center will be teaming up with manufacturers for our Practical Installer demonstration area, with working products and presentations covering the more technical aspects of renewables.

I certainly look forward to meeting many of you at Ecobuild and hearing your views and opinions on how we can make 2012 a defining moment for renewables.

Two minutes with . . .

Who are you?
Greg Banham

What do you do?
I am sales director for the UK and Ireland at Fernox.

Where are you?
I'm currently in Woking, sitting at my desk at Fernox answering these questions before my next meeting.

How's business at the moment?
usiness at Fernox is faring well. However the past couple of years have been challenging for the industry and 2012 will continue to see tough times for many. Added to this, is the fact that the domestic heating market has rapidly evolved with the emergence of renewable technologies. As such we've all had to change and adapt and this has lead to many new opportunities.

How could it be better?
The fast introduction of the Renewable Heat Incentive (RHI) for domestic installations and a clear and cohesive plan for the Green Deal roll-out to the consumer. If these come to fruition, we anticipate a rise in demand for boiler upgrades and renewable technologies, which all require protection from chemical water treatment.

Who do you admire in renewables?
I have a strong admiration for research and development teams. When you stop and think about it from a chemical water treatment perspective, when renewable technologies started to become viable alternatives in the UK – it was up to these people to create a whole new generation of products to protect these systems. That's an immense task and one that was achieved.

What's the best business advice you have received?
Always carry out what you promise and I've stuck to this throughout my career.

How are you going green?
Outside of work, I am making more use of my bike for short journeys rather than using my car. Not only is it healthier for me but I also save money on petrol, as well as doing my bit to cut down on carbon emissions. I think everyone is becoming far more conscious of 'green' issues and it's everyone making those small changes that can add up to a big difference.

Green light ahead

The Green Deal and Green Investment Bank promise to secure the future profitability of the renewables market says **Nathan Goode**, head of energy, environment and sustainability at Grant Thornton accountants

Following recent exchanges between policy-makers and the renewable industry, players in the UK's low carbon space might be forgiven for feeling that the colour green is shaded more towards vert-de-gris than emerald at the moment. Relentless optimism is not advisable, but the coming year is likely to present the opportunity to give lustre back to the colour green.

The rollout of the Green Deal and the Green Investment Bank will be key events in the 2012 calendar with the consultation period for the Green Deal closing back in January.

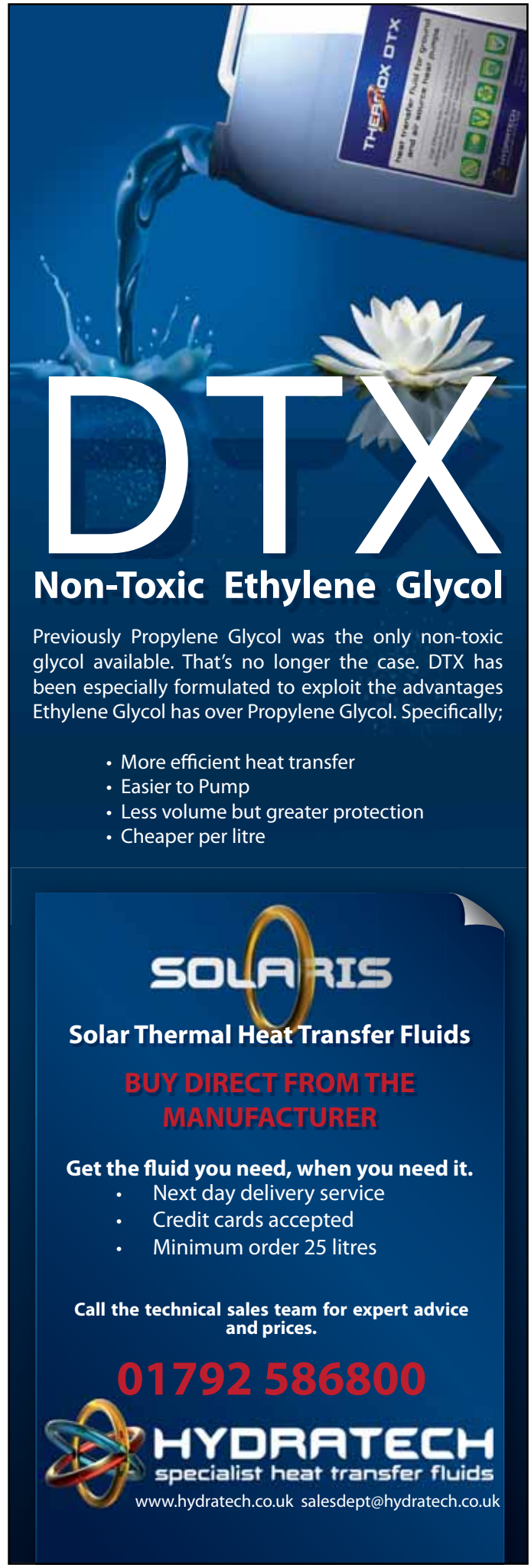
Simple concept

At its heart, the Green Deal concept is very simple despite weighing in at a hefty 238 pages. It is a carefully constructed and thoroughly researched piece focused around delivering a workable programme. The Green Deal includes a series of measures that qualify under the Green Deal that include various forms of insulation, heating and other ways of making a house more energy efficient. Under the proposals, instead of having to pay for these measures upfront, the householder can borrow the money to finance the installation of these measures and, this is the clever bit, the loan attaches to the property rather than the individual. Incoming householders therefore inherit the obligation, which is repaid through the electricity bills.

The complexity of implementing the Green Deal lies in the twin challenges of protecting the consumer and in making the programme investable at scale. Consumer protection is not just about ensuring that installation is appropriately certified and that mis-selling does not take place, but ensuring that consumers have a genuine prospect of making savings.

Coming to the rescue

The cost of installing the measures sets the amount of the loan and as a result, the challenge to wrestle with is how to make the cost of finance cheap enough to make it worthwhile. Some of the UK's finest financial brains are beavering away to square this particular circle and they will continue in this endeavour over the coming months but perhaps the Green Investment Bank will come to the rescue. Let's not forget that energy efficiency makes absolute sense in both environmental and financial terms. The Green Deal is just a mechanism to make it happen.



Ecobuild – green technology at its best

Make a note in your calendar as **Ecobuild** is about to return bigger and better than before at London's ExCeL on Tuesday 20 – Thursday 22 March

Over 1,500 suppliers will be exhibiting at Ecobuild this year guaranteeing the largest showcase of sustainable construction products you're likely to see anywhere. From names such as Saint-Gobain, BASF Construction Chemicals, Kingspan, Vaillant, and Worcester Bosch, to up-and-coming companies in Ecobuild's Green Shoots Entrepreneurs' Zone, you will be able to see the latest and best in micro-renewables.

Speakers corner

Ecobuild puts all these innovative products in context through its information-packed three day programme making a visit an exceptionally good use of your time. There's the three-stream conference, sponsored by the UK Green Building Council, that tackles macro themes such as Beyond Construction: Achieving a Sustainable Future, Making Sustainable Construction Happen and Design, Architecture & Sustainability. Renowned commentators including Sir John Beddington, Monty Don, Janet Street Porter, Greg Dyke, Tony Juniper and Angela Brady will also be on hand to cover topics as diverse as Growing out of Trouble – How Social Enterprise Can Help Restore Society, People and the Planet and Collaborative Consumption.

Sporting chance

A topical addition to the programme for 2012 is an 'Olympics Special' hosted jointly by the Construction Products Association and BRE in which Construction Minister, Mark Prisk, and Peter Bonfield, Adviser to the Olympic Delivery Authority on materials procurement, consider how, having delivered 'the greenest games ever', the learning from the development of the Olympic Park can be put to use in other developments. Also in the schedule, chief construction adviser, Paul Morrell, UKTI ceo, Nick Baird and Atkins ceo, Uwe Krueger discuss the platform the Olympics' legacy will create for UK businesses to apply this learning to international projects, and build further the UK's world-leading reputation in sustainable design and construction.

Hands on

More applied activities include Ecobuild's seminar programme which delivers practical advice from experienced practitioners through over 130 sessions such as Energy & Innovation in Buildings; Better through BIM; Buildings in Use; Future Energy and Sustainable by Design.

Visitors looking to get their hands dirty can do so at a dozen or more live attractions – literally in the case of Ecobuild's *Natural, Traditional…Sustainable* which demonstrates cob wall building alongside straw bale construction and carpentry techniques.

Elsewhere on the exhibition floor Renewable Heat Focus, sponsored by Vaillant, gives daily talks and one-to-one advice on how best to benefit from the Renewable Heat Incentive (RHI) plus a showcase of working models featuring all the latest solar thermal, biomass and heat pump technology.

Renew, sponsored by Knauf Insulation, provides practical advice on achieving one of the most important aspects of energy efficient buildings – a highly insulated, air-tight building envelope. Daily interactive demonstrations will be available covering making hard to treat buildings more energy efficient, solid wall insulation, internal wall insulation, insulating lofts and floors, party wall insulation and cavity wall upgrades.

Ecobuild's Solar Hub, sponsored by Solarcentury, will establish how the installation of solar PV still offers attractive rates of return via the UK Feed-in Tariff despite adjustments to the government's incentive scheme through a series of talks and presentations, plus one-to-one advice. Visitors will get practical guidance on how to specify the most appropriate system for best results, maximise the return on investment, reduce carbon emissions and mitigate rising

Improved offering: Ecobuild 2012 promises an even greater number of suppliers than last year's successful event

energy costs. Visitors will also be able to see a range of solar innovative systems from on-roof to semi-integrated to fully roof-integrated products, in addition to all the latest technologies from leading modules manufacturers.

Driving force

Continuing the solar theme, SolarZED by ZEDfactory puts affordable solar-powered transport at the heart of sustainable development and challenges received thinking on the provision of high density public transport provision by proposing zero carbon personal transport as a viable option.

In addition to the main programme, Ecobuild's exhibitors and partners will be offering a variety of events including the TRADA timber tours, the BREEAM awards, sessions from UKTI on international opportunities, and a programme of sessions in the UK-GBC's 'big tent' on the exhibition floor.

Spend a day at Ecobuild or, even better, spend two or three. With so much to see, learn and experience, it's a great way to make contacts and get up-to-speed with the latest issues and products.

It's all free to attend when you register at **www.ecobuild.co.uk** where you can also create your own itinerary using Ecobuild's online planner.

In focus: The cameras are rolling at another of Ecobuild's impressive demonstrations

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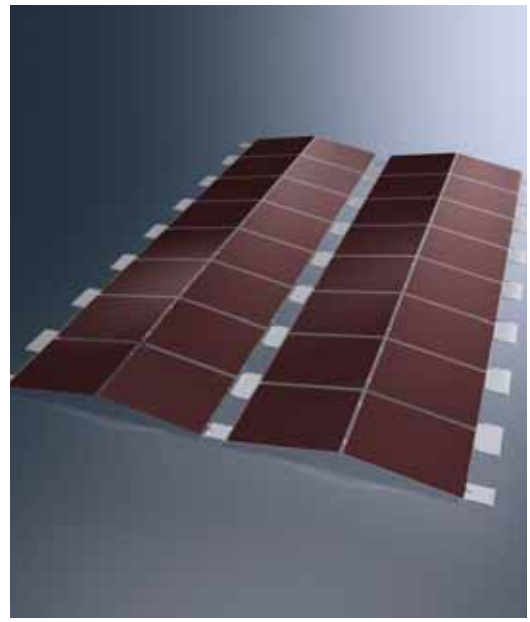
Scheuco doubles up

Schueco UK is the lead sponsor of Ecobuild 2012 and has stands in both halls. The company is showing examples of its aluminium and steel systems plus its latest solar energy products, some of which are new to the UK and all of which, it says, underlines its status as a world-class company.

The solar products on display aim to demonstrate the full range of Schueco's solar offering and include a roof-mounted display of thermal collectors and PV modules from the company's Premium and Compact Line systems; an array of ProSol TF thin-film PV modules installed on Schueco's east/west flat-roof mounting system; current pump-stations and controllers together with a newly introduced controller and pump; roof anchors and under-construction, a range of inverters and a Sunalyzer Web PR data logger. There is also a working e-bike illustrating the diverse ways in which solar power may be used.

A number of the aluminium and steel systems being shown continue the solar energy theme with full-size examples of aluminium windows and sliding doors incorporating ProSol TF thin-film PV technology, together with a ProSol-enabled brise soleil. The company also says that a heavily insulated door and façade that meet PassivHaus standards show its commitment to energy efficiency, while the Janisol Arte insulated steel replacement window from Schueco Jansen recently won a Gold Design Award at France's building exhibition, Batimat 2011.

N2940 and S310



Cover up: Schueco's MSE 100 east/west mounting system enables 90 per cent roof area coverage

Top performance

Deks UK will be exhibiting its full range of flashing solutions for solar thermal and PV installations.

The company say that its Solardek flashing provides a safe, efficient method of flashing solar thermal pipes and cables on tile and slate roofs. The Solardek features a Nu-lead base designed not to stain or corrode the roof together with the Dektite EPDM or silicone cone. Also available is an aluminium base aimed for installation on slate roofs.

According to Deks UK, its recently launched Dektite Multicable allows up to 10 cables to be taken effectively through any tile or slate roof. Its use avoids risk of damage or pressure on cables by isolating from tiles or slates and provides a complete weatherproof seal. It is also available with a lead or aluminium base.

The company will also exhibit the Dektite Premium solar flashings for installations on metal roofs. Deks UK adds that the DFE100 and DFE101 are multi-application flashings available in either EPDM or silicone and feature an aluminium band which allows the flashing to be formed over most metal roof profiles.

Also on show will be Deks' Perform flexible roof which acts as a replacement for lead. Perform is a composite consisting of aluminium mesh, embedded in polymer rubber. Both of these materials, says Deks UK, are environmentally sound and UV resistant. Suitable for many different applications it has the functionality of lead, is non-toxic and is available in four colours.

N3175

Wired up: Deks' recently launched Dektite Multicable provides a waterproof seal for up to ten cables

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REA

Hot shots

Dimplex says it has a solution for low energy warmth at home and in the workplace, on show at Ecobuild. This includes high efficiency heat pumps, fan convector radiators, energy efficient air curtains and a preview of some new electric heating technology.

Dimplex looks forward to exhibiting several new products including the Air-Eau inverter-driven air source heat pump and SmartRad range of wall-mounted fan convector radiators. The company also offers other renewable and conventional heating solutions, plus support services, project management, training and user support.

S3010

Smart technology: The Air-Eau inverter-driven air source heat pump, from Dimplex will be on show at Ecobuild

Worcester doubles its appeal

Worcester, Bosch Group is back at Ecobuild and says it will be bigger and better this year by showcasing its boiler product portfolio on a 262m^2 double -decker stand.

Worcester Bosch has added a number of new products to its portfolio since last year's event. This includes the Solar Lito and Lifestyle additions to its Greenskies range and its GB162 condensing boiler – the company's first move into the light commercial market. All of these products will be available to view at the exhibition, along with its established Greenstar boiler range which was awarded a Which? Best Buy accreditation last autumn.

N2220 and N2020

Size matters: Worcester, Bosch Group, is back at Ecobuild with a double-decker stand

Happy anniversary

Fronius is excited about 2012 – its anniversary year – and says it will mark "20 years of experience, 20 years of quality and 20 years of solar electronics" with a promotion on its 20 year warranty.

Valid until the 31 December 2012, Fronius is offering its 20 years warranty extension at half price. The promotion applies to all new installations and is valid for the Fronius IG, Fronius IG Plus, Fronius IG TL and Fronius CL series.

Nicola Lee, marketing manager, said: "This emphasises Fronius' position as the quality leader through faith in its product. Fronius inverters have one of the lowest failure rates on the market and are able to be serviced by the network of Fronius Service Partners.

"Fronius Service Partners are installers trained to open inverters to replace faulty parts rather replacing the whole unit. Installations that have the same inverter for 20 years reduce the ecological footprint of the PV system, underlining Fronius' aim to promote sustainably through its product and working."

Fronius states that an important part of its corporate culture is using renewable energy and protecting resources. The company aims to practice what it preaches through its own photovoltaic system at its production and logistics site in Austria. Fronius says it is one of the largest systems in Austria and has an output of 615 kWp (kilowatt peak) and a module area of 3,823 m^2 – meeting most of the company's power demand.

Leading by example: Fronius powers its production site in Austria using its own PV system

N3225

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The perfect balance

Libra Energy will use Ecobuild to underline its focus on technical support, system development and customer service.

Libra Energy, who has been involved in the field of solar energy systems since 2007, has outlets worldwide and opened its new UK distribution warehouse and office in South Yorkshire in 2011.

The company says it has a highly skilled and qualified sales and service network with many years of experience in international business.

Paul Bradbury, UK operations manager, added: "At present we work with 17 dedicated colleagues with different specializations. Our added value and therefore our focus lies in technical support and system development.

"To us it is perfectly normal that customer service, communication, efficiency and customer satisfaction are absolutely key."

N3460

Centre stage: Libra builds on last year's Ecobuild by returning with a new UK distribution centre

Welsh wonder

Dulas MHH is looking forward to bringing its knowledgeable team to Ecobuild which supplies installers across the market for domestic, commercial and public sector premises from up to 4kW to over 50Kw PV systems.

As part of the German MHH Solartechnik group, Dulas MHH says it can offer competitive pricing from its new offices in mid Wales with direct access to Europe-wide stocks of Kyocera, Bosch, Hyundai, LG and Sanyo PV modules.

N3441

Location location: Dulas MHH's new offices in Machynlleth, Mid Wales

Hot topic: Grant's wood pellet range has gained MCS accreditation

Grant's hot shots

Grant is looking forward to presenting its wood pellet range which has just gained MCS accreditation. The company says that the products will enable users to access the current Renewable Heat Incentive Premium Payment (RHPP) and proposed heat tariff payment whilst its wood pellet boilers are an environmentally friendly, safe and convenient way of heating the home.

The Grant Spira condensing range will also be on display at Ecobuild. This utilises the company's patented stainless steel turbulator baffle system. The company's wood pellet boiler range was also awarded Best Renewable Energy Product 2011 by the Sustainable Energy Authority of Ireland (SEAI).

N1610, N1730

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- DLG Ammonia test & Extreme hailstones test according to EN IEC 61215, 55mm (Billiard ball size) shot at 122Kmh at 11 points of the module.

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London calling

This year's Ecobuild will coincide with the spring opening of **K2**'s new branch in the UK.

It is a move which the German company says underlines its belief in the strength of the UK solar market and K2 will now be based in the UK's 'distribution triangle' west of London.

The new branch features a fully stocked warehouse and will be able to supply clients quickly from within the UK. Managing director, Kai Schuebel, and his UK team are hoping to not only strengthen the market presence of K2 Systems and extend its network of distributors, but also improve and intensify business relationships with personal expert advice and individual project support.

N3360

Home from home: K2 has just opened its new UK branch in the South East

Nice and easy

Mitsubishi Electric is using its Ecobuild stand to call for manufacturers to make renewable technology more accessible and easier to understand for building and home owners.

"The renewable sector in the UK is very advanced and there are products available right now that can help both new and existing buildings to benefit," explained Donald Daw, Mitsubishi Electric's commercial director.

The company manufactures heat pumps, photovoltaic systems, heat recovery ventilation and advanced air conditioning.

S3410

Straight talking: Donald Daw calls for less complexity in the marketplace

PV perfect

PV manufacturer, **Romag**, is looking forward to exhibiting its new products for 2012 at Ecobuild.

Following investment in its North East-based facility, Romag says that it is now seeking to offer higher output and higher efficiency modules to installers. With outputs of up to 280kW in a choice of mono and polycrystalline panels, Romag offers a range of on-roof and in-roof solar panels.

New to the UK market this year is Romag's S2Plus roof integrated system, designed to give users a more aesthetically-pleasing alternative to standard PV.

The company say that it has combined high quality PV laminates with a new production technology for framing to create the S2Plus – an MCS approved PV system that reduces installation time.

As the market emphasis on energy efficiency and carbon reduction increases, Romag believes that architects and designers are fast realising the advantages of building integrated PV in place of conventional building materials. As well as providing a sustainable source of electricity generation, Romag's multipurpose glass is a design feature which it says can also reduce solar heat gain and control light transmission and shading.

With its eye on the future, Romag will also be previewing a prototype of its newest innovation, a combined PV-T panel that incorporates PV and thermal technology generating electricity and heat in a single module.

N3940

Increased efficiency: Romag aims to offer higher output with its S2Plus roof integrated system

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Voice of experience

Since its formation in 1992, **NAPIT** says that it has successfully developed into a dynamic group of companies with a range of products. These include solar PV, solar thermal, ground/air source heat pumps, biomass, wind turbines, micro CHP (co-generation) and small-scale hydroelectricity technologies.

NAPIT adds that its team also holds a fast-growing Competent Person register of installers who can self-certify their work. As part of NAPIT's 'complete solution', no external inspections are ever required as all its installers are able to self-certify works throughout the microgeneration, electrical, plumbing, heating and ventilation sectors.

N2520

Complete solution: NAPIT has developed a group of companies with a range of products

Nice times

NICEIC will be using Ecobuild to demonstrate its preparedness for the anticipated shift amongst homeowners and businesses toward renewable technologies.

The nationwide training company claims that it is perfectly placed to give homeowners and installers the opportunity to take some control of their energy consumption as the government is committed to reducing carbon emissions and the dependence of traditional fossil fuels.

The company's trades people will be on hand to explain some of its services to installers which include certification services, building regulation schemes, insurance and other support within the construction industry.

N2715

Pass the test

New for Ecobuild, **Seaward Solar** is introducing a new solar test kit that provides a solution to MCS testing requirements.

The company says that its new MCS Test Kit is the first comprehensive fit-for-purpose test solution to enable installers to meet all of the test requirements of MCS and BS EN 62446 and incorporates the multi function PV100 electrical tester.

In addition to these products, the Seaward Solar range also includes the Solar Survey 200 irradiance meter and the power clamp.

In addition to these new instruments, solar PV test documentation and information for client handover packs can be completed quickly by either the Seaward Solar Cert Elements software package or with the company's special inspection test report and certificate documentation packs.

N2772

Diagnostic solution: Seaward's multi-function PV 100 electrical tester is one of the products on show at Ecobuild

Hot Schott

Premier product: The Schott Perform Mono 280 panel contains the world's first six inch solar cells, says the company

The Feed-in Tariff is still the topic of the moment and **Schott Solar** is using this opportunity to preview its latest PV product – the Schott Perform Mono 280.

Due to become available later in the year, the manufacturers say that this module benefits from the world's first six-inch solar cells achieving 20.2 per cent efficiency. Aesthetically, it features dark mono cells set within a black frame.

Also on display will be the ASI 107 module – which according to Schott has a double-glass construction enabling it to be resistant to environmental influences including agricultural applications – confirmed by the seal of quality for ammonia resistance issued by the German Agricultural Society (DLG).

Additionally, the company will be presenting the Protect Poly 185, the Perform Mono 190 and the Perform Poly 240 – modules which it says offer maximum yield from limited roof spaces.

John Meadows, md of Schott UK, said: "The renewable energy industry is expanding at a rapid rate. More and more businesses are coming to realise the benefits of solar power and, as one of the longest running manufacturers in the industry, we feel it is important to deliver a reliable and effective product offering. We are proud of our long history and this extensive experience is evident in the constant innovation and development of our products."

N3340

What's Nu?

According to **Nu-Heat**, Ecobuild offers a great platform for experienced renewables providers like itself to talk to a range of customers, including installers, architects, specifiers and self-builders, about cost-effective and achievable energy efficient options.

Nu-Heat says it has developed expertise in the design and supply of ground and air source heat pump systems along with solar thermal and rainwater harvesting whilst continuing to be the largest supplier of warm water underfloor heating systems to the UK domestic market.

Nu-Heat adds that its range of products fully integrates to provide energy efficient heating and hot water systems that can be tailored to the individual requirements of various properties.

Integrated solutions: Head to Nu-Heat's stand to see the advantages of using its energy efficient products

S3630

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Powered up

Despite the recent Feed-in Tariff (FiT) cuts and court cases, **Power-One** says it is optimistic for the future of solar in the UK.

UK sales director David Lowen, commented: "While electricity prices have increased by 13 per cent since April 2010, the costs for PV components have fallen by about 50 per cent in 2011 and are expected to fall by another 20 per cent in 2012. This makes it possible to still generate a reasonable return on investment with the subsidy of 21 p/kWh.

"Both policy developments bring us closer to grid parity, the inflection point where generation from PV becomes as cheap as from fossil fuels. Furthermore, the recent cuts in FiT will help to create a more sustainable base for the UK industry."

Lowen believes Power-One is well positioned to meet consumers' demands for competitive prices and excellent performance and will continue to help its customers maximize the energy they are producing.

He added: "The other area within the UK where we have noticed a small shift is the switching from residential to larger commercial and utility scale installations of more than 50kW in size. This is a market very familiar to Power-One, due to the large number of commercial and utility scale projects we've been involved with in Germany and Italy, the two power-house regions in PV. "With more than 6 GW shipped-to-date globally, Power-One offers the broadest range of solar inverters in the industry and can support whatever size project you may be working on. Please get in touch at Ecobuild to find out more."

Future is bright: Power-One's David Lowen predicts a healthy future for PV installers

N2850

Variety show

New kid on the bloc: New for 2012 is Paw's fully integrated Drainbloc system, available from Secon Solar

Ecobuild 2012 will be the first outing for **Secon Solar**'s new logo, featuring a fresh and vibrant design. As a specialist solar thermal distributor, the company says it is proud to hold innovative products from several major brands including Resol controllers, Paw pump stations, Solarmetalflex stainless steel insulated pipe and Polysun simulation software.

Among Secon Solar's new products at Ecobuild will be its new controller from Resol – the BX plus – with pre-programmed or optional functions and a new range of solar pumpstations.

The company is also featuring new Renewable Heat Incentive (RHI) approved heat meters that can be calibrated for glycol and new training rigs for colleges plus the Paw Drainbloc a fully integrated drainback system incorporating a pump, controller and a drainback tank.

N1615

What a save

VPhase is at Ecobuild 2012 to demonstrate the benefits of its voltage optimisation unit. The company will show the savings potential of lowering the voltage supply in the home.

Suitable for retrofit and new build properties, VPhase believes its unit can shave off up to 12 per cent from home electric bills and, apart from insulation, it is the next most effective green technology in terms of 'pounds saved per pound spent' and 'kg of CO_2 saved per pound spent'.

VPhase adds that any qualified electrician is able to fit a VPhase device without requiring any specialist training. The units are maintenance free, have a five year warranty and don't require any change in consumer lifestyle or behaviour.

Great save: VPhase claims its voltage optimisation unit can save 12 per cent on home electricity bills

N3900

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Triple whammy

Cleaner Air Solutions is returning to its third Ecobuild, having first exhibited in 2010 with a modest stand. A year later it took a stand three times that size which featured representatives from companies such as Click-Fit, SolarEdge and IATS providing technical support and advice to clients. As a result of its success in 2011, the company has booked a stand this year that is over twice that size again.

Cleaner Air Solutions expects to be unveiling an exclusive new range of products for commercial and domestic solar PV installations at Ecobuild and says it hopes to build on existing relationships with clients as well as attracting new ones.

According to the company, Ecobuild presents several exciting opportunities to an exhibitor, with members of the general public in attendance as well as buyers and specifiers of large-scale renewable projects.

Cleaner Air Solutions adds that it has achieved a great deal of new business on the wholesale/distribution of solar PV based on its expertise, stock availability and consistently high customer service.

N3430

Exciting times: Cleaner Air Solutions is delighted by the opportunities that will be presented by Ecobuild

Eyes on the prize

Sibert Solar is inviting all current and prospective clients to visit its stand and have the chance of winning exclusive prizes.

A business card prize-draw will be open to all visitors in addition to all purchase commitments made during the show being subject to a special EcoBuild-only discount.

Head to Sibert Solar's stand to see its portfolio of PV installation products as well as some new additions for 2012.

N3367

What an offer: Sibert's AC metering enclosure LG5235A is just one product subject to an Ecobuild-only price reduction

Look South

South Survey will be using Ecobuild 2012 as an opportunity to exhibit its range of thermal imaging cameras, borescopes, affordable CAD software, Leica Disto laser measurers and more.

The company says it aims to bring a range of the best equipment and solutions to installers and will be demonstrating how to apply them in specific industries.

N1500

Measuring up: The Leica Disto laser measurer is a key part of South Survey's product range at Ecobuild

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Shining bright

Reading-based manufacturer **Krannich Solar** says that Ecobuild is part of its commitment to leading the solar PV market in the UK

For over 16 years, Krannich Solar has been planning, consulting and producing PV systems for its commercial and domestic suppliers and says it stocks many of the largest brands. With branches throughout Europe, as well as offices in the USA and Asia, the Krannich group now has over 350 employees and a total installed capacity of 1GW.

As part of its exhibition, the Krannich Solar team will be available to meet installers, end users, specifiers and customer partners alike, as well as showcasing its product portfolio. Key products featuring on the Krannich Solar exhibition stand include Axitec and Luxor solar panels.

Commenting on its attendance at this year's Ecobuild, Krannich Solar UK ceo Juan Romera-Wade, said: "The PV industry has developed quickly over the last year and we have seen a growing interest in solar technology, despite the recent challenges. We have strong ambitions to continue to build our relationship with our network of installers and customers, as well as meeting new customers and also end users who wish to learn more about solar power. We are also looking forward to seeing other renewable technologies which are relevant to the introduction of the government's Green Deal and learning more about the opportunities that they offer. Ecobuild is a key event in our calendar and we are very excited about returning this year."

N3821

Key event: Juan Romera-Wade, Krannich Solar, is looking forward to building strong relationships at Ecobuild

Waxing lyrical

Specialist distributor of solar PV **Waxman Energy** will be using Ecobuild as an opportunity to introduce its new associate company Waxman Renewables.

Waxman Renewables has been established to specialise in the supply of biomass boilers and solar thermal systems. It offers pellet stoves and boilers from Red 365, the biomass arm of Italian stove giants MCZ, and solar thermal systems from Austrian firm TiSun, Turkish manufacturer Ezinc and Swiss company AMK.

The Waxman Group says that its expansion into the supply of solar thermal and biomass boiler systems follows the success of its solar PV business and is part of the group's plan to strategically position itself for future growth in the renewables market.

Waxman's stand at Ecobuild will showcase its product portfolio across solar PV, solar thermal and biomass boilers whilst it will also be using the event to introduce four major new PV supplier partnerships – LG Solar, Suntech, Bosch Solar Energy and Panasonic.

Richard Waxman, chairman of the Waxman Group said: "We look forward to welcoming visitors onto our stand at the show, where we will have our technical staff on hand to answer any questions and where they will be able to find out more about our product range and meet the Waxman team."

N3610

Nice spread: Waxman's product portfolio has been bolstered by four large new supplier partnerships

Raising the curtain at Ecobuild 2012

New commercial heat pump range

Be the first to see our new commercial heat pumps at Ecobuild 2012.

The exciting new range of air and ground source heat pumps are designed to meet the needs of organisations with a larger demand for heating and hot water such as schools, hospitals, care homes and commercial premises.

For more information, Danfoss will be exhibiting on stand number S3610. Ecobuild 2012 is from the 20-22 March at London's ExCel.

www.uk.heatpumps.danfoss.com

Getting hands on

Practical thinking: Plumb Center has teamed up with manufacturers again to create the Practical Installation demonstration area

Practical Installer returns to Ecobuild again this year, giving visitors a chance to experience renewables installations first hand. Plumb Center has teamed up with manufacturers from across the renewables industry to create the demonstration area that will offer 36 live presentations spread out over three days.

The company says that each session will provide insight in to some of the technical considerations when installing renewable technologies, dispelling some of the myths and showing how many of the products that are already on the market will be instrumental in delivering a sustainable future.

Practical Installer will be divided in to five topical areas covering solar thermal and PV, retrofitting heat pumps, rainwater harvesting, biomass and micro CHP, and finally grey water recycling and water efficiency.

Alongside Plumb Center, the manufacturers involved in Practical Installer include: Baxi, Dimplex, Ecoplay, Fernox, Honeywell, Kingspan Renewables, Kingspan Water, Uponor, Vaillant and Worcester Bosch.

Day One		
Start time	**Topic**	**Presented by**
11.00	Roof mounting solar PV panels	Ploughcroft and Plumb Center
11.30	Installing rainwater harvesting systems	Kingspan Water
11.50	Retrofitting a heat pump	Dimplex
12.20	Installing solar thermal collectors	Vaillant
13.20	Filling and flushing solar thermal systems	Fernox and Vaillant
13.45	Understanding greywater recycling systems	Ecoplay
14.05	Micro CHP and biomass featuring wireless controls	Baxi and Honeywell
14.25	Retrofitting a heat pump	Vaillant and Uponor
14.55	Installing solar thermal collectors	Worcester Bosch
15.25	Filling and flushing solar thermal systems	Fernox and Worcester Bosch
15.50	Installing rainwater harvesting systems	Kingspan Water
16.10	Roof mounting solar PV panels	Ploughcroft and Plumb Center

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Day Two		
Start time	Topic	Presented by
11.00	Roof mounting solar PV panels	Ploughcroft and Plumb Center
11.30	Installing rainwater harvesting systems	Kingspan Water
11.50	Retrofitting a heat pump	Dimplex
12.20	Installing solar thermal collectors	Kingspan Renewables
13.20	Filling and flushing solar thermal systems	Fernox and Kingspan Renewables
13.45	Understanding greywater recycling systems	Ecoplay
14.05	Micro CHP and biomass featuring wireless controls	Baxi and Honeywell
14.25	Retrofitting a heat pump	Vaillant and Uponor
14.55	Installing solar thermal collectors	Vaillant
15.25	Filling and flushing solar thermal systems	Fernox and Vaillant
15.50	Installing rainwater harvesting systems	Kingspan Water
16.10	Roof mounting solar PV panels	Ploughcroft and Plumb Center
16.40	Understanding greywater recycling systems	Ecoplay
17.00	Micro CHP and biomass featuring wireless controls	Baxi and Honeywell

Day Three		
Start time	Topic	Presented by
11.00	Roof mounting solar PV panels	Ploughcroft and Plumb Center
11.30	Installing rainwater harvesting systems	Kingspan Water
11.50	Retrofitting a heat pump	Dimplex
12.20	Installing solar thermal collectors	Worcester Bosch
13.20	Filling and flushing solar thermal systems	Fernox and Worcester Bosch
13.45	Understanding greywater recycling systems	Ecoplay
14.05	Micro CHP and biomass featuring wireless controls	Baxi and Honeywell
14.25	Retrofitting a heat pump	Vaillant and Uponor
14.55	Installing solar thermal collectors	Kingspan Renewables
15.25	Filling and flushing solar thermal systems	Fernox and Kingspan Renewables

Fan club

Life's a breeze: Kingspan has added wind turbines to its existing portfolio of solar and heat pump products

Kingspan will be using Ecobuild to showcase its first range of wind turbines.

New to the field of wind power, the renewable energy manufacturer says its turbines (3kW and 6kW) are aimed at rural domestic, small holdings and agricultural applications. They are said to deliver high yields even in severe winds due to their blade hinge design and over-speed protection system.

Unlike other turbines, which need brakes to protect them in high winds, Kingspan says its turbine blades pitch and cone allowing continual operation.

In solar thermal, visitors will be able to see enhancements to the company's Varisol modular vacuum tube solar thermal collector which, according to Kingspan, is the world's first modular vacuum solar thermal collector with no manifold.

Ecobuild will also mark the launch of Kingspan's range Tribune HE industrial unvented hot water cylinders for commercial sizes of up to 500 litres. It will also be showcasing its Albion Aerocyl heat pump only or heat pump and solar input cylinders.

Also on show will be the company's flagship Thermomax solar thermal vacuum tubes – which are designed specifically for northern European climates – and flat plate panels. According to Kingspan these products will provide up to 70 per cent of hot water requirements throughout the year and the vacuum inside each tube will insulate the system against all outside influences increasing its performance.

In addition, Kingspan's Solar Loading & Fresh Water modules will be on display plus its Aeromax Plus air source heat pumps will be present in a range of outputs from 4kW through to 105kW.

N2440 and N2750

Go with the flow

Fernox will be at Ecobuild to showcase its new generation of chemical water treatments designed for renewable heating applications.

In addition to existing products such as the Total Filter TF1, Fernox will be promoting its heat pump range and its new Solar Flow Pump which, according to the company, is designed to facilitate the easy filling and cleaning of solar heating circuits.

Francine Wickham, global marketing director for Fernox, said: "Ecobuild provides the ideal platform for installers to speak to our experienced Fernox team and discuss best practice when it comes to chemical water treatment."

N2440 and N2660

Showing off: Fernox will be displaying its lightweight new Solar Flow Pump

Join the club

Azur Solar says it is launching several new products at Ecobuild including quality lower cost inverters, additional mounting system products plus additional high output and smaller size modules for the aesthetically conscious.

The company is also looking to sign up Azur 2P Quality Dealers to market its Azur 2P coated modules which, according to Azur Solar, provides installers with an excellent opportunity to sell into the higher margin value segment of the with a truly differentiated product.

Visitors are also being invited to become reseller partners for the new Azur Independa battery storage and energy management range that it plans to introduce in 2013; and learn more about its growing list of reference projects and its updated webshop.

Next generation: Azur Solar is inviting installers to sign up as Azur 2P Quality Dealers to market its 2P coated modules

N3250

“Schueco delivered the best combination of price, performance and guarantees”

When sustainable developer, Dove Jeffery Homes, was asked to build ultra-sustainable Code Level 6 Homes for Norwich-based Wherry Housing Association, director Chris Dove turned to Schueco UK to provide a complete PV package. Tenants of the 12 affordable homes – built on land donated by Broadland District Council – are now all benefitting from reduced energy bills thanks to the 61 kWp of solar energy generated by roof-mounted Schueco PV modules installed by local company C J Electrical. What persuaded Chris Dove to choose Schueco was the combination of a proven quality product, an affordable price, long-term guarantees and excellent service and technical support. It’s another example of Schueco’s Energy^3 concept in action. **www.schueco.co.uk**

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SCHÜCO

Exclusive showing

Ubbink (UK) is now the exclusive distributor for the German-made Wolf range of boilers and solar thermal. Both companies are part of the Centrotec Sustainable AG Group, which has companies in the Netherlands, Belgium, Germany, England, France and Italy.

According to Ubbink, the Wolf brand is highly respected throughout Europe. Kevan Peaker, Ubbink's UK director and general manager, said: "Here in the UK, the market for gas condensing boilers and solar thermal has been dominated by three or four well-known brands. Our aim is to position Wolf as an alternative choice to these brands, particularly in the high-end domestic and small commercial sectors. Wolf offers similar levels of quality and performance, with additional specific benefits which will be of interest to installers and end users."

Wolf offers gas condensing boilers from 11kW to 100kW; a complete line of solar thermal products including flat plate collectors, control systems and accessories, as well as a solar swimming pool absorber.

Wolf boilers are tested in accordance with German and European Directives and certified with the DVGW quality symbol. They are said to offer extremely clean combustion, with high standard efficiency up to 110 per cent (Hi) / 99 per cent (Hs) for the best possible energy utilisation. With excellent access to key components, they are particularly popular with installers and service personnel.

Wolf's range of high performance flat-plate collectors also feature highly weather resistant aluminium collector housing and 60mm Rockwool thermal insulation. They are tested to EN 12975 part 2 and certified in accordance with Solar-Keymark (F3-1).

N1960

Hot stuff: Wolf CGB range wall hung gas condensing boiler

Solfex sizes up

Solfex Energy Systems will be exhibiting from its new 120 sq meter double deck stand concept at Ecobuild 2012.

The stand will feature the company's latest solar thermal and PV products including the newly launched CPC OEM vacuum tube collector and the new Prozeda Primos range of solar thermal controllers. Web-module Conexio 600 and Convisio software will also be on the stand where, live interactive demonstrations will show customers the advantages of inbuilt data logging and SD card slots and how a solar thermal system's information, yield and controller remote control access is available for viewing and changing on the internet.

Other solar thermal features will include the full solar thermal collector range, pump groups and the newly launched Prestige Solar Thermal Packs. Combined systems for solar thermal domestic hot water and back up space heating support will also be showcased.

Modules from Kioto Photovoltaics will be on display including the 54 cell polycrystalline and the black frame / black back sheet and jet black cell Mono-crystalline. Power 60 cell versions will also be on display.

Power-One Spa inverters will heavily feature on the stand including the new Aurora Uno single phase and Trio three phase ranges, plus the new Aurora Micro -0.3-1 micro inverter which is set for launch imminently.

Doubling up: Solfex will be exhibiting from its new 120 sq meter double deck stand

After viewing Solfex's products, visitors can attend the upper deck of the stand which features an exclusive terrace bar and coffee lounge. Lounge access is invitation only available online at **marketing@solfex.co.uk.**

N2920

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Pumping power

Visitors to Ecobuild will have the opportunity to see **Wilo**'s range of pumps up front and personal.

This will include the first opportunity to see some products which the company says will offer new opportunities for installers and specifiers to save energy and reduce emissions.

According to Wilo, it offers the widest range of pumps and pumping systems from small circulating pumps for domestic central heating and air conditioning, up to large commercial pumps for heating, air conditioning, pressure boosting, sewage and grey water pumping. Drop by the Wilo stand to meet the Wilo team, discuss your pumping requirements and to get a feel for the range and to request information.

N1640

Pumping iron: Wilo say they offer the widest range of high efficiency pumps including the Stratos Giga

Take the leading edge

Conventional wisdom dictates that PV modules cannot be installed in one string across two or more differently-sloped roofs or roof facets. However, a growing number of UK PV installations are turning this wisdom on its head. **Engensa**, for example, recently installed a system consisting of one SolarEdge inverter connected to one string of 18 modules. What differentiates this system is that the modules are spread across two differently sloped rooftops (25˚ and 40˚), on two different buildings.

In this installation, Engensa made use of SolarEdge power optimisers. Attached to each module, power optimisers track modules' individual maximum power point, ensuring that each module always performs at its optimal level, regardless of existing power mismatch or orientation mismatch. In addition to the added energy they produce, SolarEdge power optimisers also allow installers to utilize more available roof space, save time on system design and reduce the system's overall cost. Return on investment remains stable, even with lower Feed-in Tariffs.

N4139

Top it off: An installation using SolarEdge power optimizers

Micro management

Enecsys will have a major presence at Ecobuild this year and has chosen it as the venue to unveil a new version of its monitoring system. The new release has some exciting new features, says the company, designed to streamline the solar PV installation process, especially for large, complex installations across multiple locations.

Enecsys will be showcasing its cost-saving 480W Duo micro inverter, the SMI-D480W-60, a product that brings micro inverters and their benefits into the same price range as string inverters.

The Enecsys team will be on hand to discuss the technology and benefits of micro inverters with Solarcentury each day at the Solar Hub.

N3729

Show time: The Enecsys 480W Duo micro inverter which will be showcased at this year's Ecobuild

DulasMHH is one of the longest established and largest solar PV wholesalers in the UK. We have always supplied Kyocera modules and Fronius inverters and now as part of MHH Solartechnik, we offer an even wider product range from more high quality manufacturers including Sanyo, LG, Hyundai and Bosch modules and SMA inverters.

At DulasMHH we also pride ourselves on the level of technical support and personal service we provide - every installation that you complete is as important to us as it is to you. If you are coming to Ecobuild at the ExCel in March - we'll see you there.

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- VPhase works well alongside other renewable energy systems, improving overall household energy efficiency.
- The VPhase unit is available from most electrical distributors and wholesalers throughout the UK.
- It has been independently tested and proven to make significant carbon, energy and money savings.
- **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.

Concerned about the FiT review?

With FiT levels due to change and uncertainty over what this means for both the public and private sector, many installers are now considering alternative solutions. VPhase voltage optimisation is an ideal supplementary product that can be installed either on its own or alongside a solar PV array. Check out the VPhase web site for more information.

FREE Training video

scan this code with your smartphone

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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Test case

Jim Wallace of Seaward Solar unravels the confusion surrounding solar PV testing and the use of appropriate test equipment

The enormous expansion of the solar PV market has presented significant opportunities for installers and suppliers of solar PV equipment.

For the installer faced with the question of what test instruments to use, the matter is therefore one of being able to identify exactly what is needed to fulfil their obligations to the customer and also satisfy the various industry standards and best working practices.

The requirement for all installers of PV systems in the UK is to satisfy the Microgeneration Installation Standard: MIS 3002 which requires that PV systems are installed in accordance with the DTI's *"Guide to the installation of PV systems, 2nd Edition 2006."*

In addition to the guidance given by the DTI, a British Standard BS EN 62446:2009 *Grid connected PV systems – Minimum requirements for system documentation, commissioning tests and inspection* has been published, giving details of specific electrical tests that should be performed all on PV systems at the time of installation and commissioning.

Pass the test: Installers are faced with a range of issues when testing

Fundamentally, a PV system is part of the electrical installation and therefore the electrical works should comply with the requirements of BS 7671 IEE Wiring Regulations 17th Edition, along with the particular requirements for the inspection and testing of DC circuits specified by BS EN 62446.

Earth continuity

Where protective earthing and/or equipotential bonding conductors are fitted on the DC side of the installation, for example bonding of the array frame, the continuity should be tested. The connection to the main earthing terminal should be tested. An instrument which complies with the requirements of BS EN 61557-2 should be used.

Open circuit voltage and polarity

Prior to installation, it is good practise to measure the open circuit voltage of each PV module and compare the measured value with that on the rating plate to ensure that each module is functioning. It is much easier to correct problems or replace a faulty module before it is installed. It should be remembered that the data shown on the rating plate is taken under standard test conditions and values measured in the field may deviate from those shown on the rating plate. The polarity of the DC cables should also be checked to ensure it is correct.

When the modules have been installed, the open circuit voltage of each string should be measured and compared with the expected value. The polarity should also be confirmed. For systems with multiple identical strings, the open circuit string voltages should be compared. For stable irradiance conditions the values should typically be within 5 per cent. The measured open circuit voltage for each string should also be recorded on a PV array test report.

Voltages less than the expected values may indicate that one or more modules are connected with incorrect polarity or insulation faults. Higher voltages are usually the result of wiring errors.

Short circuit current

The string short circuit current is measured by applying a temporary short circuit across the DC terminals of the PV string and measuring the resultant DC current. The apparatus used to apply the short circuit must have a rating greater than the potential short circuit current and open circuit voltage.

The temporary short circuit can be applied by a short circuit cable connected into a switching device already present in the string circuit, a suitably rated test box or a dedicated PV short circuit test instrument. When the temporary short circuit has been applied, the short circuit current can be measured using a suitably rated DC current clamp or in-line DC ammeter. In the case of a dedicated PV test instrument, such as the Seaward Solar PV100, the short circuit load and in-line DC ammeter are housed within the test instrument.

For systems with multiple identical strings, the short circuit string currents should be compared. For stable irradiance conditions the values should typically be within 5 per cent. The measured short circuit current for each string should be recorded on a PV array test report.

It should be remembered that applying or removing a short circuit on a live PV system is potentially hazardous. Care should be taken to avoid risk of electric shock or damage due to electrical arcing. The installer should therefore give careful consideration as to how this test is to be performed and ideally use an instrument which is capable of automatically applying a short circuit and measuring accurately the current during the test.

Big is beautiful

Cumbria's largest commercial solar PV system at **Lakeland Livestock Mart**, Cockermouth, benefits from new technology

Sundog Energy says its latest commercial installation at Mitchell's Lakeland Livestock Mart, Cockermouth, is not only the largest commercial system in Cumbria but is also the first solar PV installation in Europe to benefit from an innovative mounting system called Trinamount. The system, from solar panel manufacturer Trina Solar, has been designed to significantly speed up the installation time of Trina's solar PV panels by reducing the number of parts and eliminating the need for traditional mounting rails.

The 50kWp retro-fit installation comprises 212 Trina Solar high efficiency PV modules mounted on a pitched steel roof. The system will provide enough renewable energy to light and power Mitchell's business during the day with surplus power being exported and sold to the national grid.

According to Martin Cotterell, founder and technical director of Sundog, and who led the installation team on site from start to finish: "We had a race against time in very testing weather conditions to complete this landmark installation before the December 12, deadline for the Feed-in Tariff, so we were really able to put the new mounting system through its paces and appreciate the very significant benefits it brings."

Bill Roberts, managing director of Sundog commented: "The recently announced reduction in solar subsidies means that we are adopting innovative ways to reduce installation times and therefore costs for our customers and the installers we supply. We believe that this new system will be quickly taken up by installers around the UK."

Hot news: Sundog Energy says this PV installation is the largest in Cumbria

Continued from page 65

Operational current

With the system switched on and in normal operating mode, the current from each PV string should be measured and compared with the expected values. The operating circuit current can be measured using a suitably rated DC current clamp. For systems with multiple identical strings, the string operating currents should be compared. For stable irradiance conditions the values should typically be within 5 per cent.

Insulation resistance

One of the most important tests required by BS EN 62446 and the DTI Guide is the insulation resistance measurement. Inadequate insulation not only increases the risk of electric shock and/or fire but reduces the performance of the system, as a portion of the DC power generated by the PV modules is lost through leakage currents to earth.

The insulation resistance measurement is made between the live DC conductors of a PV array and earth. The test should be performed either between the array positive and earth followed by the array negative and earth or alternatively, the test can be performed between the array positive and negative shorted together and earth. Where the array frame is bonded to earth, the earth connection can be to any suitable earth connection or the array frame. Where the array frame is not bonded to earth, two tests are required between the PV DC conductors and earth and between the PV DC conductors and the frame. If the array has no accessible conductive parts, the test is performed between the DC conductors and the building earth. The measured insulation resistance should be recorded on a PV array test report.

A short circuit can be applied in the same manner as that used to perform the short circuit current measurement, taking the same precautions when applying or removing the short circuit. The ideal solution is a test instrument with a dedicated PV insulation resistance test. Such instruments are connected directly to the PV string cables using dedicated test leads and apply an internal short circuit between the positive and negative DC conductors whilst at the same time applying the appropriate test voltage to measure the insulation resistance. This reduces the risk of exposure to hazardous live parts or damage to the PV modules.

The test instrument used should have a range of test voltages and should automatically discharge any voltage when the test is terminated. In addition, the test instrument should meet the requirements of BS EN 61557-2. The open circuit voltage, and to a greater extent the short circuit current, vary with the intensity of sunlight striking a PV module. If the irradiance is not stable during open circuit voltage or short circuit current measurements a measurement of the irradiance can be used to adjust the measured values.

The intensity of sunlight, known as solar irradiance, is measured in watts per square metre (wm-2) and should be recorded on the PV array test report.

The most accurate and representative readings are produced from irradiance meters which utilise sensors which are similar to the technology utilised in the PV modules themselves. The ideal solution is an irradiance meter where the sensor is a photovoltaic cell rather than a photo-diode which will not necessarily have the same characteristic response to sunlight as a PV module itself. For accurate measurements of in-plane irradiance, the irradiance meter must be at the same angle to the sun as the PV modules.

With such a wide range of test instruments available, the best advice for the solar PV installer is to ensure the appropriate instruments are selected to satisfy the mandatory requirements and then extend the range as necessary with those test products which provide more diagnostic information.

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Team effort pays off

Solfex Energy Systems and southern regional installer Ocean Solar recently undertook a 16kw system in the South West of England. This comprised of 66 panels of the Kioto 225w/p module.

The installation was carried out on The New Forest Enterprise Centre, local to the New Forest National Park, an area of renowned natural beauty.

The investment was discussed prior to the install being taken out due to planning and also the return of investment. As this was a major investment the New Forest Enterprise Centre confirmed how pleased it was with the saving made on CO2 emissions.

Ken Budden of Ocean Solar, commented: "This is a very nice project to be have been involved with and also having carried out a lot of installations in the surrounding areas, this is the most bespoke system and largest we have carried out."

The company used the Kioto KPV module with a 12 year manufactures product guarantee, a 97 per cent module efficiency for the first year which then drops by 0.75 per cent reduction per annum. This was proven to the customer using independent simulation software, which highlighted that the modules outperformed some rival cell modules, producing up to 10 per cent more Kwh per annum.

The module also boasts a low weight of only 16.5kg, which, says Solfex, was also ideal for this installation as 66 modules had to be lifted into place. In addition, the module was a low profile of 33mm. All these factors were taken into consideration because of the number of modules being installed.

The module has also passed IEC 67101 (the salt mist corrosion test) the atmospheric details for the salt mist corrosion with highly concentrated atmosphere so the end user is assured of a robust top quality and high performing module with the best warranty conditions. Also being so close to the south of England the salt mist corrosion was also taken in to consideration before the installation was carried out.

Solfex and Ocean Solar both use in-house design engineers and all the necessary calculations such as the correct inverter selection for this project for the maximum yield and also the calculation of the wind loading structure were undertaken. The mounting system chosen was the On-Roof Tau system – this was due to the roof being a trapezoidal roof and Solfex was able to offer the lateral fastening of fix clips to the raised bead for this particular project.

Solfex is delighted with the way this project was carried out and that everyone was pleased with the results. The entire system was installed in two days from start to finish.

School for thought

Why an accredited heat pump installer recommends **Dimplex**'s solar PV training

Reg Clifton of QED (UK) attended a Dimplex solar PV training course. A chartered engineer and quality specialist with nearly 50 years' experience across a variety of sectors including defence, facilities management and construction, these days Clifton offers services as a consultant and project manager. He is already a Dimplex accredited heat pump installer, and also writes layman's guides to new technologies such as heat pumps and solar PV, so he needs to be knowledgeable in all aspects of the industry.

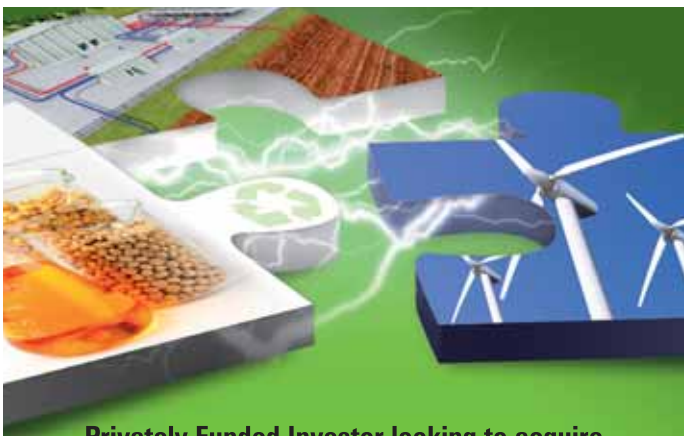
He explains: "My involvement with solar PV at the moment tends to be on the system design side, but I find it's extremely useful to have a full understanding of the whole installation process.

"The Dimplex PV course is very concentrated. The trainers are excellent and every aspect is covered. Plus, of course, in my view the company makes quality products – I've worked with Dimplex equipment since the 60s and I always recommend it and specify it for a wide variety of projects.

Clifton continues: "It's a time of terrific change in the industry. The renewables market is growing rapidly, offering great opportunities. But both the market and the technology are changing so quickly, you've got to work at keeping up to date, in order to be able to give the best advice on projects, and to the public."

Dimplex's solar PV course also provides recognised training competency towards installer certification under the Microgeneration Certification Scheme (MCS). Once MCS certificated, attendees will be able to access grant funding for their customers for any installations completed.

Training ground: Installers on a Dimplex training course. Reg Clifton was delighted with the company's solar PV course



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Assessing the future

Ecoskies Renewable Energy Training outlines how its training will help with the EPC ratings

An important part of the government's plan for renewables has been crowded into the background by the uproar surrounding the state of the solar PV Feed-in Tariff (FiT).

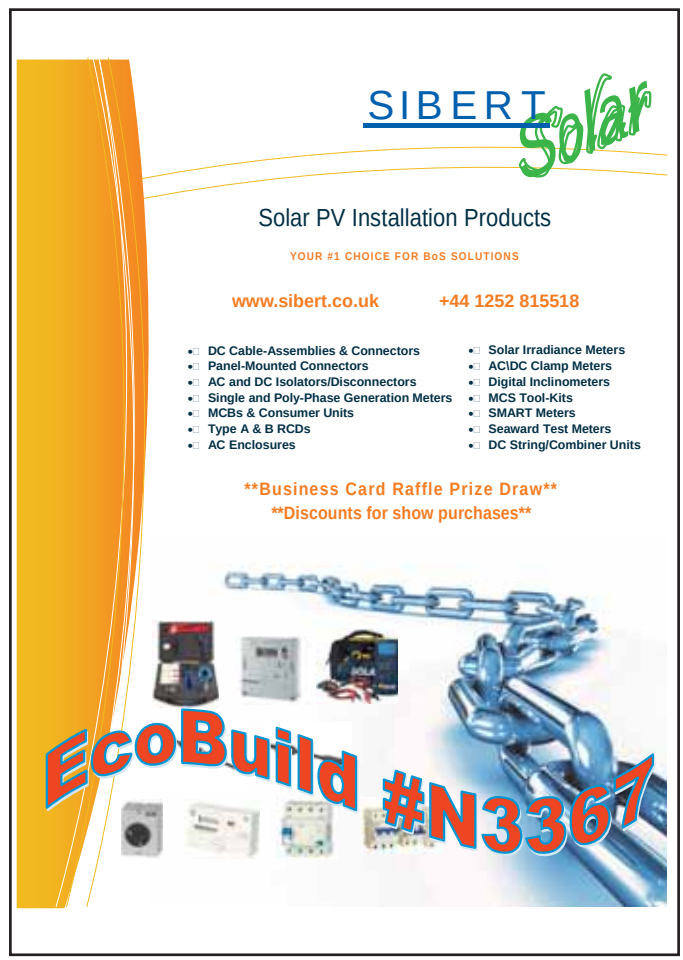
In the same document that laid out the FiT cuts, DECC also made it clear that its plans include the requirement for Energy Performance Certificate (EPC) assessments on properties with renewable energy installations before they are eligible for a full tariff.

EcoSkies Renewable Energy Training centres, based in Chesterfield, anticipated this future requirement by creating a three-day Domestic Energy Assessor's (DEA) course. This enhances its portfolio of renewable energy installer training courses which includes solar PV, solar thermal, biomass and domestic heat pumps.

Brett Pearson, business development manager of EcoSkies, said: "DECC appears committed to bringing EPC requirements in the future. If they put those requirements in place, there's no reason for an installer to have to watch extra revenue go to an outside DEA assessor on their own installs. We say, come to us and let us help you get accreditation now. You'll have a versatile new arrow in your quiver, plus you'll be augmenting the services you offer your customers."

Despite the recent developments around FiTs Pearson maintains a positive outlook on the state of the PV industry. He said: "We believe in PV because it makes sense as a technology and as an investment. Our commitment to renewables training across the spectrum of technologies, including PV, is as strong as it's ever been."

Train to gain: EcoSkies anticipated future requirements by creating a three-day Domestic Energy Assessor's (DEA) course



On the bright side

Chris Hopkins, Ploughcroft discusses the latest Feed-in Tariff announcement and its impact on the PV sector

"DECC's announcement on 9 February brought much needed transparency to the solar sector. Specifically, it clarified that a tariff of 21p/kWh would take effect from 1 April this year for domestic-size solar panels with an eligibility date on or after 3 March.

"A less widely reported aspect of DECC's announcement is that properties installing solar PV systems on or after 1 April this year will be required to produce an Energy Performance Certificate rating of 'D' or above to qualify for a full Feed-in Tariff (FiT). The previous proposals for a 'C' rating would have meant that fewer homeowners would have been eligible to receive the full FiT. An EPC grade D therefore makes a FiT for solar PV available to many more homes.

"Of course, homeowners who install before 31 March won't need an EPC and they will still be guaranteed the full FiT rate of 21p/kWh for 25 years – a clear incentive for them to install before this deadline to avoid the cost of an EPC.

"However, there are areas of the DECC announcement that still concern. For instance, from 1 July 2012, the tariff will step down from 21p to 16.5p, 15.7p or 13.6p, depending on number of installations completed in March and April 2012. Although the 21p rate is still viable – providing a return of £24,000 from a £9,999 investment – we believe that a rate of 13.6p will dissuade many homeowners from investing in a solar PV system. The tariff will also be paid for a duration of 20 years for all installations from 1 April 2012 – a five year reduction from the current 25 years.

"Whatever the post-July rate, there will be further reductions of 5 per cent every six months, as part of an automatic cost control mechanism. The general consensus is that six monthly intervals is too short a duration and that 12 months would give more time for manufacturers and installers to deliver the necessary cost savings that would still make solar PV viable for all businesses.

"The solar PV sector still provides many opportunities for installers at the 21p rate, although there is no doubt that the announcement has and will continue to make things tougher.

"My advice to installers is partner with a solar PV supplier that has the muscle to drive your business forward."

Kitted out?

As the solar PV market comes to terms with the changes to the Feed-in-Tariff (FiT), **Rupert Higgin**, md of The Green Electrician, examines whether new pre-assembled kits may be the answer to help installers both improve efficiencies and operating margins

The solar panel market across the UK has enjoyed a boom over the last few years as householders and companies have taken advantage of the FiT microgeneration scheme.

With the FiT cuts high on the agenda, plus energy efficiency to consider, installers are being forced to radically review their supply chain, pricing and margins whilst considering how they can work smarter in order to remain competitive and profitable.

Reducing costs

With energy costs continuing to rise and the government's policy of supporting green energy solutions, there remains a strong future for solar power, even with reduced tariffs. However, for installers to maximise the opportunities presented, fitting solar PV in turn needs to be quicker and simpler.

One direction many installers are turning is in the direction of kits. These part assembled kits are specifically designed to help make the life of the installer that bit easier, by providing them with a custom designed package including panels, frame, inverter, cables, training and support.

Bright future: Rupert Higgin sees Greenkits as an answer to the FiT reduction

Saving time

By using a kit, the time and effort of selecting the right components is minimised as is the time spent installing on site. For example, GreenKit (a pre-assembled kit from The Green Electrician Group) uses PV panels from Suntech and Sharp that are selected based on the feedback and experience gained from The Green Electrician's installers. The same research and approach is used when selecting the aluminium framework, cabling and inverter board.

GreenKits are also delivered to site and are backed by manufacturer's warranties, again to give the installer peace of mind that the equipment is a genuinely durable and quality product, rather than simply the cheapest on the market or available at the point of order.

The cost of the kits is also an attractive element. By effectively pooling the buying power of smaller installers there is an opportunity to buy the component parts in bulk or direct from the manufacturers, with much of the cost savings in the case of GreenKits being passed on to the installers.

Improving aftercare

The other critical benefit is the holistic approach offered to installers when it comes to appropriate training and aftercare. Obviously every property developer or householder should use an MCS qualified electrician when fitting solar PV panels, but systems can vary and having a single point of contact for the entire installation is hugely beneficial should something go wrong.

So what does the solar PV future look like? Although the changes to the FiT have undoubtedly undermined the growth in the industry, there remains a positive outlook for the solar PV market. The reason for such a positive outlook is principally because the industry is innovative and responsive one and one that can react positively to change. The emergence of such pre-assembled kits is one such example.

Indeed, it needs to be so as the coalition government stated back in 2011 that the solar tariffs will be 'intelligent and responsive to change' in future, so it is likely that we will see further regulation on the horizon. However the new products, services and technologies that are emerging can clearly help installers improve efficiencies and protect profits.

The next step

According to Greenfix its solar safety step means no more broken tiles or tools slipping of the roof. This lightweight aluminium frame for use by solar panel fitters, gives a safe secure foot grip by spreading the load on the roof, helps prevent slipping on wet and dirty tiles. It is rubber-backed giving cushioning to roof tiles/ slates greatly reducing potential breakage and reduces fatigue in ankles and knees. It also boasts adjustable positioning of top hooks to fit any roof tile shape, plus tool holding section.

Step by step: Greenfix's solar safety step means no more broken tiles or tools slipping off the roof

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In demand

Renewable energy specialist, **Enact Energy**, says demand for solar PV systems in the six weeks leading up to 12 December reached unprecedented levels as homeowners across the country tried to secure the higher Feed-in Tariff (FiT) payments ahead of the Department of Energy and Climate Change's (DECC) deadline

Mad rush: John Egan, Enact Energy. The company experienced unprecedented levels of demand for solar PV in the run up to the 12 December deadline

Enact had teams of installers fitting systems on domestic properties across the country ahead of the 12 December cut-off, to help as many of its customers as possible to benefit from the higher FiT rate of 43.3 pence per kWh.

Senior management at the company said staff in its call centre and its nationwide network of installers had been working flat-out in the six weeks between the DECC announcement at the start of November which set out plans to cut the Feed-in Tariff payments to the new 21p per kWh for installations after the 12 December 2011.

"As soon as the announcement was made by DECC to cut Feed-in Tariff payments we saw a significant upturn in homeowners looking to beat the deadline. The six-week window gave the industry very little room to meet any new demand and we were faced with a situation where we were having to turn customers away knowing that there was simply not enough time to go through the proper assessment and installation process.

"Prior to the announcement, solar electricity installation levels had been increasing each quarter since the Feed-in Tariffs were launched in April 2010, but enquiries and orders grew dramatically in November as news of the significant reduction in the FiT spread," said Enact Energy ceo, John Egan.

According to figures published in the Ofgem quarterly review of the Feed-in Tariff scheme, whilst a total of 80,875 installed renewable installations had been undertaken between April 2010 and December 2011, more than 35,000 installations had been registered in the last three months of the year alone, with PV installations accounting for over 98 per cent of installations undertaken.

The South West, South East and Scotland remain the areas with the highest installed capacity in Great Britain, with the largest increase in installed capacity taking place in the South West which saw a 268 per cent increase between June and September 2011.

"Following the December deadline and the subsequent High Court and Court of Appeal Rulings, there is no doubt that the decision to cut Feed-in Tariffs had a downward impact on the numbers looking at solar," said Egan.

"However, whilst in the short term the solar PV industry will shrink, in the medium term we fully expect the renewable energy industry as a whole, to grow, albeit in a more sustainable way as solar remains a viable investment opportunity for homeowners particularly in the light of the fact that capital costs for solar systems have also dropped to their lowest level ever, so it is not all doom and gloom," he added.

Protecting interests

Renewable Solutions explains how PV Protect™ will safeguard a client's investment and provide an essential revenue stream and sales tool for the installer

The government, OFGEM and many other organisations have recently highlighted the growing issue of fuel poverty. As PV technology gets more established in the UK, knowledge of its benefits will spread, and with it will come the threat of theft.

Other countries with more established PV markets have seen PV theft become a reality, and many of these do not have fuel bills spiraling at a rate as high as our own.

The average PV client has in excess of £10,000 of investment vehicle, unguarded on a roof!

There are also many investment-based PV schemes in the UK, installed in higher-than-average crime areas. It is logical to protect these installations, especially when the fund is retaining the FiT payment.

The concept

PV Protect™ is fully UK / Internationally Patent Pending. It is a stealth system (inaudible), protecting the system owner from confrontation and damage to the system/ property.

PV Protect™ works by alerting the occupier, landlord, site manager or other third party of the attempted theft, without alerting the thief.

How it works

Bespoke marine-grade pressure switches are installed to key modules on the array by a universal profile bracket (any profile will accept a PV Protect™ system). The moment a module is lifted from the array, a signal is sent to a central unit (inside the property). This can be programmed to wirelessly phone the property owner (or any other number), where a pre-recorded message will advise that the PV installation is being tampered with. The call is made wirelessly by GSM – no landline is required.

Third party alerting

Elderly or frail clients can have PV Protect™ programmed to notify a nominated neighbour, friend or family member of the theft attempt, for peace of mind.

Multi-site installations

Each property can have its house number programmed into it's central unit, and all units programmed to phone a site manager or security manager. The system will then advise of the exact property being targeted - and all without knowledge or worry to the occupier.

Installer benefits

There are numerous advantages for the installer, says Renewable Solutions. Firstly, every existing PV owner is a potential client for a PV Protect™ system, so every client can be contacted and extra revenue generated - and without any sales or marketing costs.

The company also predicts that in the aftermath of the Feed-in Tariff (FiT) reduction, it will give companies an opportunity to generate a new income stream and, most importantly, utilize experienced installation teams who otherwise may be laid off.

A PV Protect™ system offered as part of a new PV installation also builds value and offers a unique selling point over a company not offering the technology.

The price is right

Units will be available after Ecobuild, with a cost price of around £380. The RRP will be around £1200 – a small price to pay for 25 years peace of mind, says the company. And it adds, given that two to three systems could be installed in a day (without the need to pre-survey), the revenue potential for a sales or installation company is excellent.

The company is accepting initial calls of interest, where installers can also reserve stocks pre-Ecobuild launch.

It is happy to look at exclusivity in certain territories or for certain applications (ie. fund-based, multiple site, free system etc) subject to volume purchase.

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Working model

Kyle Harris, an installer with Cleaner Air Solutions, describes his route into PV installations and why he enjoys working where he does

Following a period of unemployment, due to an injury, 23-year old Kyle Harris, secured a job with Cleaner Air Solutions. He began his solar installation training at the Renewable Energy Academy run by the company and located next to Cleaner Air Solution's headquarters in Durham. The academy works closely with Sharp Solar and the training includes various types of systems such as flat roofs and building integrated PVs.

Harris went from graduating from his training, to a full-time job at Cleaner Air Solutions within a solar team. The company says its large client base and trusted reputation offers Harris numerous opportunities to travel across the country. Each of the teams consists of an electrician, roofer and labourer. Since his employment Harris has progressed to head up his own team whom often join forces with other teams and members for larger scale jobs.

Very aware of recent developments of how the public view solar installers after an influx of 'solar cowboys' and much media attention surrounding them, Harris is keen to maintain the solar industry's reputation. His recommendation is to choose an established solar PV installer and to look for reviews and recommendations from past jobs the installer/company have done. He prides himself on the fact that Cleaner Air Solutions' installers are MCS certificated and maintain exceptional professional standards from the initial call through to after-sales satisfaction.

Terry Skee, commercial director of Cleaner Air Solutions, says: "Kyle can be hugely proud of his achievements and he typifies the kind of employee we look to bring in, develop and add to our workforce.

"The renewable energy sector is growing exponentially and will be crucial in creating jobs and reducing unemployment in areas like the North East where austerity measures have led to widespread job cuts."

Top job: Kyle Harris, Cleaner Air Solutions, enjoys working in PV

Class monitor

Photovoltaic system supplier, Tritec UK, has launched Tri-Ka, a hand-held characteristic curve monitoring device, designed to make it easier to ensure solar PV systems achieve maximum yields.

According to Tritec, Tri-Ka is easy to use and fits into the palm of a hand. It weighs 500g, but its casing is tough and durable. Using the LCD colour touchscreen, the actual output of a PV system can be measured and compared to the expected output under Standard Test Conditions (the STC ideal curve analysis).

Tri-Ka can be used both as a commissioning tool and as a PV array trouble-shooter. With even minor system faults costing hundreds of pounds in yield losses, it's important for any problems with a PV system to be detected and remedied quickly.

Simplicity is key: Tri-Ka is easy to use, says Tritec

Replacing old multi-meters and clip-on ammeters, Tri-Ka is said to make monitoring the PV system during installation and maintenance much simpler. Wireless connection between the measuring device and the sensor speeds up the job and removes the need for wiring.

Large input range

Tri-Ka has a large input range for current (0.1 to 15 A) and voltage (1 to 1000 V), which means that both individual modules and entire strings can be measured. It uses an irradiation sensor, Tri-Sen, which has two reference cells (mono- and poly-crystalline). This means that Tri-Ka can measure irradiation with complete precision, producing highly-accurate results.

5,000 performance curves

Tri-Ka boasts more than 5,000 performance (STC) curves. These are sourced from a wide range of manufacturers, and Tri-Ka can be updated regularly with the newest data.

Steve Griffiths, sales and marketing director at Tritec UK commented: "The launch of Tri-Ka is significant, because there is simply nothing like it on the market. Tri-Ka provides a way to differentiate from competitors and offer the most comprehensive service possible. Its level of technical innovation means that Tri-Ka is geared towards savvy installers with an eye for the future market."

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Quality speak

Wayne Terry of NQA, a certification body for MCS product certification, looks at the process a manufacturer needs to go through to gain MCS approval

Quality counts: Wayne Terry, NQA, describes the process required for a product to gain MCS accreditation

All installers of renewable energy systems will be familiar with MCS for installation, and the need to use MCS certified products. Few people outside the manufacturing fraternity, however, are familiar with the process required to achieve that product certification and may be surprised at its rigour.

MCS certification is much more than a simple box-ticking exercise, it is designed to ensure that government-backed products will perform effectively for the length of time required by any incentive scheme (such as the 25 years for the Feed-in Tariff).

There are basically two aspects to MCS product certification. Firstly, the products need to be tested to make sure they will fulfil their function effectively. Just as importantly, the manufacturing facility itself needs examination to make sure it is sufficiently well organised and controlled to deliver consistency of production.

The factory must operate a documented manufacturing quality control and assessment scheme – its Factory Production Control. This document covers all aspects of quality control in manufacturing. It is not a static process and must include regular reviews and an established training programme to make sure new staff understand and implement the agreed procedures.

If a company holds the standard ISO 9001, then most of these requirements will already be in place, but to achieve MCS certification the manufacturer will still need to demonstrate its Factory Production Control.

The MCS certification body will examine all the paperwork and will visit the factory to make sure that the processes appearing in the documentation really reflect the working practice on the ground. This audit process will require considerable expertise and time – a minimum of two days on site would usually be expected for most factories.

The certification process also involves product testing. MCS includes a detailed list of performance criteria that the finished products must meet in order to gain certification. These will consider the generating capacity of the product as well as its manufactured quality – the aim is to ensure that the product performs reliably and will continue to do so for 25 years. Again, it is not just the test results that are important, but also the expertise of the testing facility itself.

The easiest option for the manufacturer is to send its products to an independent testing facility that is itself certified by an internationally recognised organisation, in which case the MCS certification body will simply ensure that the tests carried out are those required by the MCS standard.

If the testing house is not accredited under ISO17025, then the MCS certification body will need to examine and assess the procedures of the testing house to establish the results it produces can be relied upon.

There are a number of bodies that are accredited to award MCS certification, of which NQA is one. For the installer, it should not matter which certification body carries out the function as they will be equally rigorous. For the manufacturer who has to work with the certification body, however, the difference can be marked. In addition to NQA's global reach, with auditors spread around the world, making visits to manufacturing plants more straightforward, it prides itself on offering a personal service in a highly technical environment. Furthermore, NQA is also able to certify all the various renewable technologies currently included in the MCS scheme.

If the UK is to keep on track with its carbon reduction targets there will be an increasing role for renewable energy technology. It may be that government incentives may change, but the commitment to increasing take-up of these technologies is long-term: there can be no doubt that any government scheme will require products and installers to demonstrate their quality through recognised schemes such as MCS.

Broadcast news

Scottish community building **Radio City** has installed 240 Kingspan Renewables solar thermal vacuum tubes to meet its extensive hot water needs, whilst becoming a model of sustainability in the town of Kilbirnie, Ayrshire

Once a former art deco cinema, Radio City provides much-needed facilities for locals, including a gym, radio station, café, IT, office spaces and beauty rooms. The 25m^2 installation of HP200 Thermomax solar thermal tubes was part of a large retrofit project to cut carbon emissions and running costs, which also included fitting solar PV panels to service the building's electricity.

Thermomax tubes were specified to feed into a pre-heat system to help meet up to 70 per cent of the annual hot water needs of the listed multi-use building, including showers and sinks in the gym area. The solar thermal installation is expected to contribute 12.98MWh to the building's hot water system annually and help Radio City avoid more than 3,500kg of carbon emissions each year.

Planning regulations

The tubes were specified and fitted by Glendevon Energy, Kinross-based suppliers and installers of solar thermal, solar PV, biomass and heat pump technologies. A key concern for sales director, Jamie Adams, was meeting strict planning regulations in place for work on listed buildings. He said: "It was a specific planning requirement that the solar thermal collectors did not impact on the view of the building from key vantage points, so we needed to find a solution that would effectively meet the hot water needs of the building without damaging its appearance.

"We chose Thermomax vacuum tubes because the smaller surface area of their manifolds make them much less obtrusive than competing products, yet they still deliver optimum performance – even in wet and windy weather. They provided the ultimate solution we were looking for, integrating discreetly with the look of the Radio City building whilst offering the highest level of efficiency needed to meet its demanding hot water requirements."

Making music: Radio City's new solar thermal vacuum tubes from Kingspan Renewables have proved suucessful

Exposing solar thermal

The Plumb Center's **Simon Allan** argues why now is the time for solar thermal to move out of the shadow of its more conspicuous sister technology

The recent review of the Feed-in Tariff (FiT) for photovoltaic (PV) seems to have somewhat overshadowed the huge potential of solar thermal. For many applications, solar water heating will not bring in money that helps recoup initial costs, although it does offer long term reductions in energy usage and is a relatively straightforward measure that can often be retrofitted with an existing heating system.

For those who doubt the efficacy of such systems, a recent report by the Energy Saving Trust (EST), based on field trial data, showed that solar thermal can realistically provide up to 60 per cent of a household's hot water requirements.

Solar thermal qualifies for support under the Renewable Heat Premium Payment (RHPP) and accounts for 32 per cent of the £3 million pounds worth of vouchers that have been issued. However, less than half of those vouchers have been redeemed to date, which means there is still plenty of scope for householders to save £300 on approved products until the scheme ends on 31 March 2012. Beyond that, it is hoped that the second phase of RHI and eventually the Green Deal will continue similar funding for domestic installations. Meanwhile, RHI already offers a metred 8.5p / kWh for solar thermal in commercial or public sector buildings.

An array of different approved products is already on the market, incorporating evacuated tubes and on-roof or in-roof flat plate collectors, with prices that will suit a variety of budgets. There are even systems that work alongside a combination boiler, so an even broader range of applications is covered. For those who don't relish the idea of working at heights, Plumb Center offers a fixed price solar panel installation service through specialist roofing contractor Ploughcroft.

All in all, the outlook for solar thermal is very positive – especially as 2010 figures indicate that the market grew by an unexpected 18 per cent. So while PV might continue to dominate the headlines, let's not forget about other ways of harnessing the sun's energy.

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Accommodating change

Homeless citizens in Plymouth are the latest to benefit from renewable energy following the city's **Battery Street Hostel**'s decision to embrace green technology

CCTV, security and panic alarms, cat 6 cabling, heat pumps, underfloor heating and local cooling units were all fitted along with Grant solar thermal and PV systems as part of a council supported £3.5m investment scheme designed to reduce the building's carbon footprint and energy consumption.

Double whammy: Battery Street Hostel opts for a solar thermal and PV mix

The renewable systems comprised 16 Grant Sahara collectors in a bronze finish combined with two 750ltr Grant DuoWave cylinders for water heating which were installed by Plymouth-based contractor Electrical Contracting Services (ECS). The solar thermal collectors have a performance efficiency of 81 per cent which, together with their robustness, made Plymouth City Council opt for Grant solar thermal systems. Additionally, ECS fitted 22 Grant solar PV 180W monocrystaline modules totaling a 3.96kW system for electricity generation, which can be used to run any appliance in the building that is powered by the mains. Installed facing due south, this system can generate around 3300kW of electricity every year.

As both the products and installer are MCS approved, the hostel is able to claim under the government's Feed-in-Tariff (FiT) scheme for power generation over the next 25 years, and take advantage of the proposed Renewable Heat Incentive (RHI) tariffs for solar thermal. These incentives will result in a reduction of capital payback time for the equipment, whilst guaranteeing a future income to help home some of those destitute and living within the Plymouth area.

Solar software companion

GeoT*SOL basic from the **Solar Design Company** is a professional program for planning and evaluating heat pumps. GeoT*SOL is the companion program to existing software T*SOL and PV*SOL for solar thermal and PV

The Solar Design Company is offering free demonstration programs of GeoT*SOL basic which can be downloaded from its website. Users can also view a new video which demonstrates how to get started using the software.

Designed by Valentin Software in Germany, GeoT*SOL basic aims to help users to decide on the optimum depth, diameter and number of boreholes for a particular location. It compares borehole- and air-source heat pump systems, and creates reports for customers with useful energy data, SPF, CoP and graphics.

By calculating heat price against anticipated service life, customers can be provided with economic efficiency predictions says the Solar Design Company.

In control

CoolSky, with the help of Invest Northern Ireland, has developed an innovative control system for solar thermal heating which it is now marketing abroad for both commercial and residential users.

The company used an Invest NI Innovation Voucher to develop and test a new controller that it says is technically advanced but much easier to use than existing devices currently on the market for solar water heating systems.

CoolSky was formed in 2009 by a group of engineers, led by Kathy McVeigh, with experience in renewable energy, particularly solar thermal systems for heating hot water. It identified an opportunity for a device that would be easier to fit and use by installers, maintenance staff and owners.

The voucher success enabled CoolSky to access the expertise and facilities at the University of Ulster's School of the Built Environment in testing and further development work on the new controller.

"Innovation Vouchers were introduced to encourage smaller companies in particular to embed innovation in their operations by promoting relationships with expert staff in third level institutions such as universities and Further Education colleges. CoolSky now has a working relationship with the University of Ulster's School of the Built Environment."

McVeigh said: "Our controller has been designed to make installing, maintaining and operating solar heating systems easier than ever before and thereby to encourage more people to opt for this form of renewable energy. Our knowledge of the industry enabled us to identify a significant market opportunity for a 'plug and play' controller that was reliable and easy to operate. All solar controllers presently available are technically complex and aimed at the sophisticated German market.

"What we have achieved, assisted by the School of the Built Environment through the Innovation Voucher is the development of a solar controller that requires no monitoring and no complicated set-up. Its unique feature is the user interface, which clearly helps both installer and user to understand the function and status of their solar hot water systems. This is achieved through visual imaging, a feature which makes the understanding of the controller intuitive.

Team work: Kathy McVeigh, Coolsky and Olive Hill, Invest NI's director of technology and process development. Coolsky has developed a control for solar thermal heating

"This unit will also take advantage of technology to enable the 'personalisation' of the product range, providing a controller that requires little or no on-site programming by the installation engineer. It also is designed to incorporate sophisticated wireless technology to help monitor and control the system function.

"Our strategy is to extend and develop the range of products to include other renewable energy sectors and applications.

"The Innovation Voucher was immensely beneficial in that it enabled us to access the University of Ulster's specialist indoor and outdoor solar testing facilities. We used these to test the controller under real conditions, similar to a domestic or commercial solar thermal installation. The tests validated the product concept and this has enabled us to move forward on market entry," added McVeigh.

PAW for thought

The PAW DrainBloc from Secon Solar is a pre-built, fully integrated solar pump and solar controller incorporating a drain back tank allowing fast installation of drain back solar thermal systems. DrainBloc comes in a self-contained unit taking up less space and benefits from being neat-looking too.

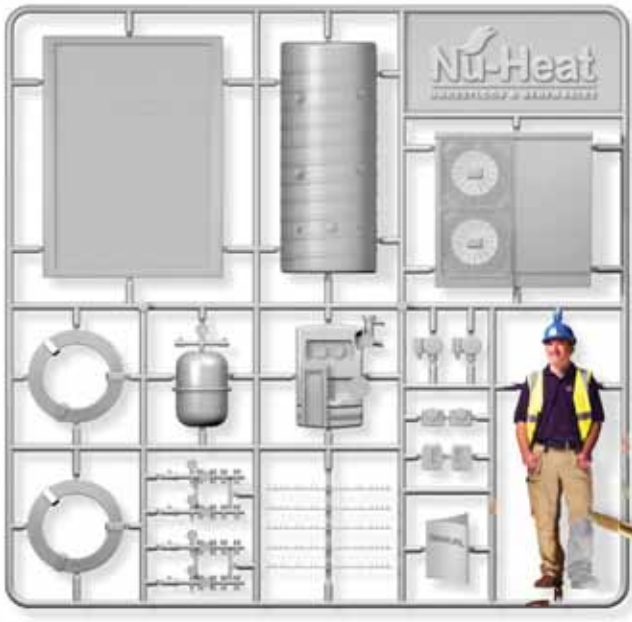
The DrainBloc avoids overheating by draining the collector field when the pump is not in use or the system store is satisfied. The fluid drains back into the DrainBloc unit which has an integrated container. With the collector field now free from fluid it removes the stagnation problem.

With the system draining down this overcomes the possibility of the fluid freezing in the collector. The installer must ensure the collector field and pipe work completely drains back into the DrainBloc to ensure complete system protection.

By draining the collector field when the pump is switched off it allows the system to be filled with water as the heat transfer medium which has its own advantages. These include improved heat capacity compared to glycol; the water has lower and more constant viscosity; environmentally benign fluid and compatibility with Class 2 RHI heat meters.

System control is based on the usual differential between the collector and storage cylinder which applies PWM pump speed control. The total system heat quantity measurement is also calculated by the controller which monitors temperature, pressure and flow rate. VBus terminals are available on the controller so all the usual accessories are possible to be added.

Specifications of the system include: a SC25-DBC solar controller already installed, preset and prewired; a collector and tank sensor; a PAW DrainBloc PWM pump, a container made of stainless steel with visual level indicator; a flowmeter with inspection window and a pressure gauge.



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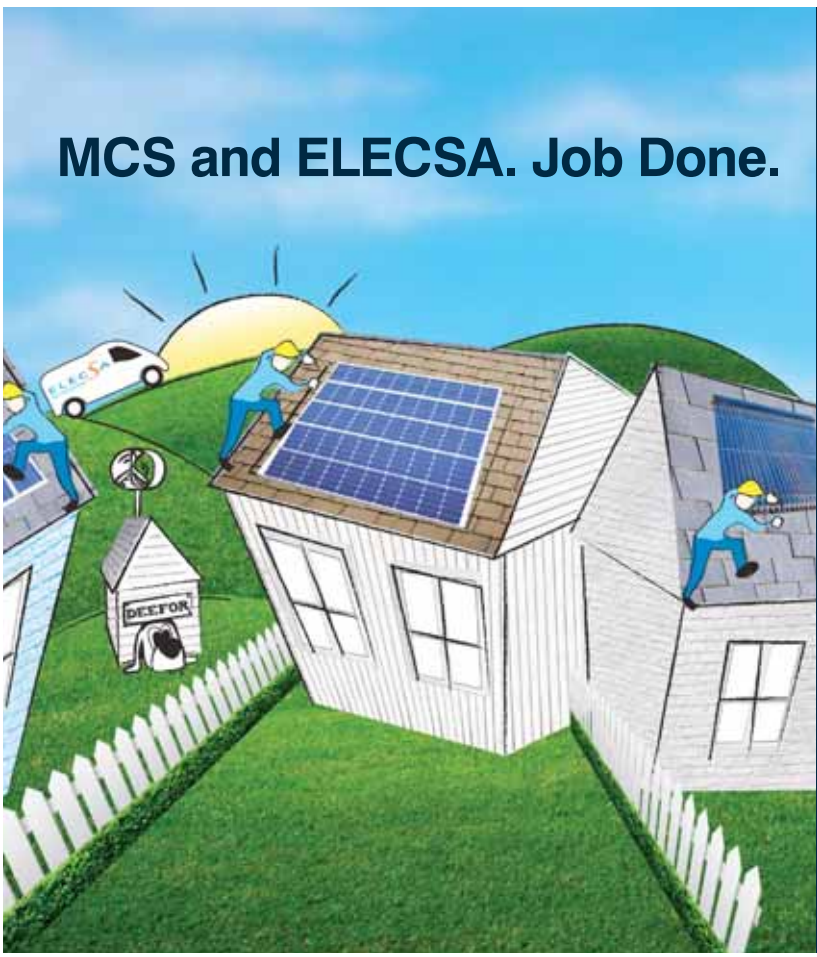

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Currently experiencing an unprecedented volume of enquiries and contracts relevant to solar technologies, **Solar Express** has positioned itself to cater for all sizes of domestic, commercial and house builder installations

Take the Express: One of Solar Express' installations. The company has reported unprecedented enquiry levels of late

With the introduction of the Renewable Heat Incentive (RHI) and current tightening of building EPC requirements, Solar Express has recently conducted a number of significant large thermal installations of 25kw power and over.

Solar Express has been collaborating with a number of prominent designers, specifiers, manufacturers and HVAC companies. It says that whilst many competitors committed to focusing on fully exploiting the Feed-in Tariff (FiT) rate for PV installations, Solar Express continued to develop its services across the disregarded thermal market and was able to continue to offer existing clients full commitment on all solar technologies whilst enhancing an already robust solar thermal market presence developed and evolved through over five years of engagement within the industry.

Based within the emerging hotbed of renewable energy providers midway between Leeds, Manchester and Sheffield, the close proximity to the M62 corridor, and national transport networks beyond, Solar Express asserts itself to provide both local and full a UK installation and service coverage, whilst maintaining a level of service surpassing its regional and national competitors.

Looking forward, exciting times are evident says Solar Express. Although the rapid variation of the FiT rate levels has undoubtedly sent ripples of uncertainty throughout the industry, based on current enthusiasm and demand for the products and services offered, Solar Express is confident in where this year and beyond is heading.

According to Solar Express, domestic PV customers are continuing to display significant interest, albeit, it seems, primarily where a roof mount 3.66kw output is viable with bespoke ground mount demand also increasing. Domestic solar thermal is enjoying renewed interest influenced by the Premium Heat Payment, whilst solar thermal for schools, accommodation blocks and new builds is exceeding all expectations. Liaising closely with similarly positioned installers of heat pumps, wind turbines and biomass, and more large projects in the pipe line, both in the UK and the Middle East, Solar Express is continuing to prove its position within the renewable energy sector.

Overboard, underinsured…

What happens when the panels you ordered don't turn up? **Mark Ellis**, Sturdy Edwards (Insurance Broker), outlines who's responsible for insuring goods at different stages of their journey

The order has been placed, the survey completed and you are on site for the first day of the installation at your customer.

But there is a problem. The panels from your supplier haven't arrived…

There could be a number of reasons why – maybe the lorry transporting them has caught fire or been involved in an accident on the motorway. Perhaps they have been stolen, or the warehouse people at the suppliers have dropped them. But you are insured… right?

Cargo Insurance (also known as Goods in Transit or Marine Sendings) will protect an owner of goods in the event of an insured event. It is always prudent for owners to insure their own goods, rather than rely on the cover afforded by a haulier or supplier's contract of carriage.

The reasons for this is that goods owners cannot depend on the conditions of carriage to adequately compensate them for their loss, as there may be limits on the haulier or carriers liability, or even exclude it in its entirety! Unfortunately for many, these conditions are read only AFTER the event, and can often lead to disappointment.

Anecdotally, it has been known for the supplier of PV solar panels to replace "at their cost", lost or stolen goods. However, this is likely as a result of a commercial decision for a valued customer as opposed to a contractual obligation, and should the loss be significant, the result may be different second time around.

Far better then to take matters into your own hands, and insure in your own name.

Cargo Insurance will protect you against a range of perils which goods face when travelling around the world, including within the UK.

With regard to the renewable energy sector specifically, Cargo Insurance will be required by anyone importing stock from abroad. This will cover transport by air, sea, rail and road within the designated territorial limits (for example, Europe only, or Worldwide).

There are many Insurers offering this cover, and the premium is often much less than you think. If you import stock, or are responsible for it whilst in transit within the UK, speak to your Insurance Adviser, who will be able to obtain a quote on your behalf.

Even with "Cost, Insurance and Freight", it may be worth considering insuring yourselves if your imports are high, as cost of insurance arranged by you is likely to be much more competitive.

The policy may also not be arranged within the UK, and therefore lead to protracted correspondence in a foreign language in the event of a claim.

A quick guide to who is responsible for insuring stock:

Terms of Sale	When You (the Importer/Installer) Will be Liable
Ex Works (EXW)	From factory door of seller
Free Along Side (FAS)	From arrival at foreign dock
Free on Board (FOB)	From loading onto ship
Cost and Freight (C&F)	From loading onto ship
Cost, Insurance and Freight (CIF)	Never
Carriage and Insurance Paid (CIP)	From unloading in UK

Taking cover

Naturesave Insurance is now offering renewable energy insurance for medium-sized wind, solar or hydro systems. The company's **Bee West** explains the benefits of this policy

Aimed at manufacturers, installers and homeowners with systems up to 750Kw, Naturesave Insurance's policy ensures adequate cover for equipment, and guarantees protection for revenues earned.

Naturesave claims that it now offers a far more extensive policy than most other providers including:

- Material damage (lightning, storm, theft, fire, vandalism etc)
- Mechanical breakdown (over and above that covered by any existing warranty)
- Loss of revenue (caused by material damage or machinery breakdown)
- Public liability insurance (third party property damage and bodily injury emanating from material damage to the system)

Large to small

The company already offers insurance covering larger-scale commercial installations (over 750kW) but identified a gap in the market to cover small-scale community or commercial systems. This product has therefore been developed to help organisations and businesses whose systems cannot be classed as 'domestic' but who are unable to afford the large-scale renewable energy insurance. Cover is currently provided for organisations with renewable energy installations eligible for the Feed-in-Tariff (FiT) including wind turbines, solar PV and hydro systems. Initially cover will be available on systems up to 750kW, for either individual systems or as part of a group of project sites, which are individually less than 750kW. It is intended that cover will be expanded to include other types of renewable energy systems, such as anaerobic digesters, in the near future.

Installer benefits

According to Naturesave, knowing that this type of cover is available, especially the element relating to loss of revenue, could enable manufacturers and installers of renewable energy systems to offer an additional assurance to their customers, and will inevitably make it easier for installers to sell their products and services.

If any installers or manufacturers are interested in highlighting this service, Naturesave is offering reciprocal links on its website (listing installers by region), and can also provide customised leaflets if required.

This product has been developed to help organisations and businesses whose systems cannot be classed as domestic but who are unable to afford large-scale renewable energy insurance

From silicon to solar panel

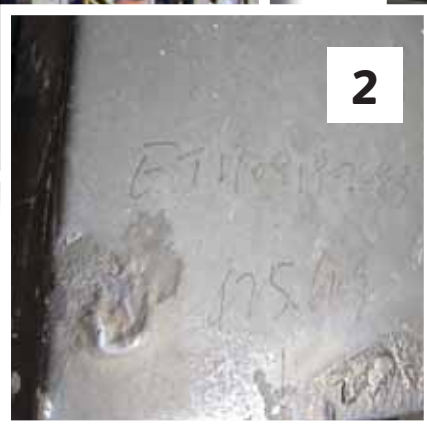
The manufacture of a solar panel is a thorough process which in the case of ET Solar involves over 200 stages of development and checks, says **Jane Hughes**

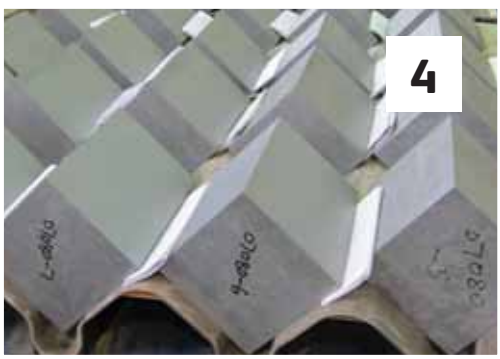
REI was invited to see ET Solar's manufacturing process first hand through ingot, wafer and cell to finished module at the company's manufacturing plant in China.

Modules are produced for commercial, residential and utility applications with projected capacity for 2012 year end being 800MW wafer, 1000MW cells and 1600MW of modules.

The company's solar panels feature integrated bypass diodes to protect the solar cell circuit from hot spots during partial shadowing. Anodised aluminium frames with hexagon drainage holes have strong load resistance with grounding holes on four sides. Modules are finished in transparent, low-iron and tempered glass with anti-reflective coating.

A selection of the process stages are illustrated on these pages.





(1) The silicon which is sourced from Korea is heated to a melting point of 1420°C using American equipment.

(2) This solid block of melted silicon can produce 12,000 wafers. The block is first made into 25 smaller blocks or ingots using a Swiss slicing machine.

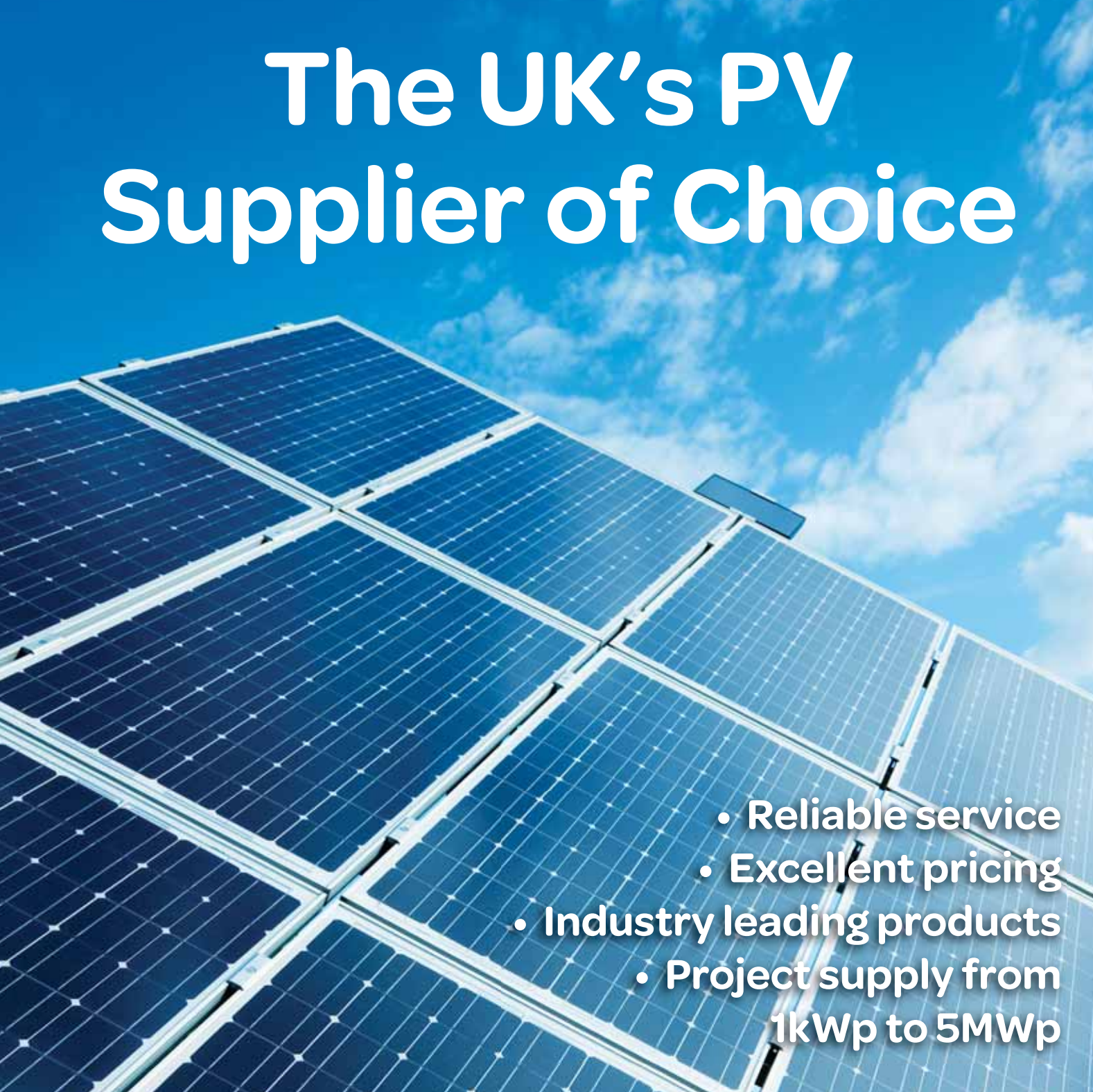
(3) Each ingot is infra red scanned in a laboratory to check for impurities.

(4) The provenance of each ingot can be tracked via its unique code.

(5) The ingot undergoes a series of processes to smooth edges until a glass like finish is achieved.

Continued on page 92

The UK's PV Supplier of Choice



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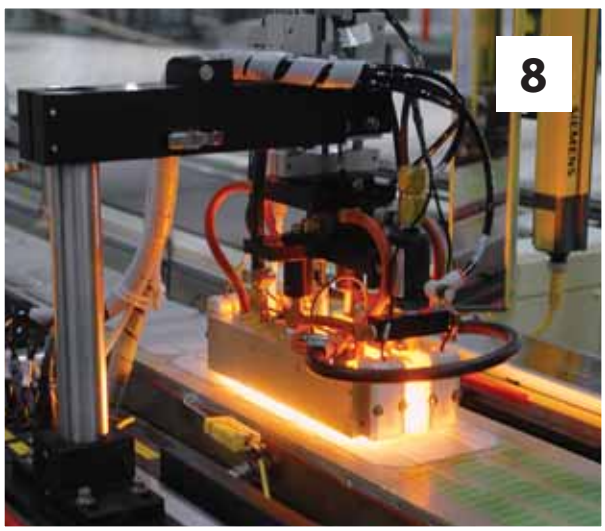


(6) Once the ingots have been sliced into wafers. Each wafer is put through three washing processes to remove any further impurities.

(7) Each individual wafer is then checked by hand before undergoing the soldering process…

(8)…which can be either fully automated or undertaken as a manual operation.

(9) The module is assembled and laminated before being (10) fitted into its rigid frame.

(11) Each completed module is checked at a testing station before…

(12) … being packaged and sent to customers across the world.

If you want to get ahead . . .

It may well be tempting to curb your marketing spend following the government's decision to reduce the Feed-in-Tariff. With the explosion of sustainable energy providers during the past year added to the mix, **Laura Jones**, marketing manager at MCM Net, looks for the best way to navigate your company through a competitive 2012

Digital guru: Laura Jones spells out a profitable marketing strategy

Many companies might be tempted to cut back in a bid to save money as the market becomes more aggressive. Upon first assessment, this seems like a sensible and effective strategy. However, if your company does choose this route, you risk losing sales to those more visible in your industry. After all, if a customer doesn't know about you, how can you expect to secure their business?

Switch on to digital

Therefore, the key is to spend money wisely, reaching a large audience who will be receptive to your message. With over 476 million internet users in Europe alone, the digital audience has never been so big and it's still growing. So, marketing to your potential customers online has never been so important.

A digital strategy can incorporate an arsenal of tactics including the creation of a new site or improving your current website presence, search engine optimisation techniques, e-mail marketing, mobile applications and viral games.

There are a few basic steps that should be taken to create an attractive web presence in order to increase your chances of conversion. A clean and clear design is essential for any site. Calls to action, such as the company phone number, e-mail address and enquiry forms are vital if you want customers to get in touch and 'About Us' sections and homepage introductory text can de-mystify your products and services for first time purchasers.

There are a few basic steps that should be taken to create an attractive web presence in order to increase your chances of conversion

Think like your customer

Many website visitors are likely to be impatient and as a result, they hate clicking through hundreds of pages on your site to find information. Make your navigation simple and keep the number of pages a visitor has to click through at a minimum. Incorporate a search facility to make it easy for users to find what they want quickly – or they will leave your site and go to another provider.

Treat visitors as if this is their first interaction with your industry and you'll be more likely to find new business. If possible, create a focus group that contains members of your target audience and ask them what they think of your website ideas.

Get noticed

Getting your website noticed by search engines is vital to drive traffic to your site. Search engine optimisation is the process of making your site rank higher in Google's natural listings. Improved rankings in Google mean higher visibility, more traffic and more enquiries.

If you're looking to significantly improve your rankings, you will need to enlist the services of a reputable agency but there are some steps you can take yourself to see some positive changes.

Including key phrases that you would like your businesses to be associated with and appear for in search engines, should be included in your website copy. Don't put key phrases in your website copy too frequently though or Google will see it as 'spammy' and demote you on listings!

In addition, look to get your site promoted on other reputable sites. Quality, relevant resources are more important than having lots on poor, remote sites. Create great content that would be useful to your audience and you'll be more likely to get a good response.

A good foundation to any digital marketing strategy begins by creating a useable and focused website presence and consequently, promoting that presence effectively. Start with these tactics and you'll be more likely to stand out amongst your competitors.

Figure it out

Each issue **REI** brings you a range of interesting industry statistics. We highlight domestic installations and MCS figures in this issue

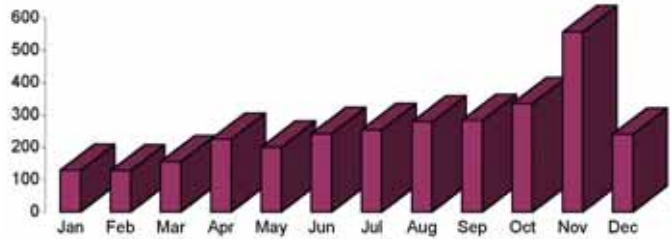
Domestic renewable energy installations throughout the UK during 2011

	No of domestic installations
Solar PV	124478
Wind Turbines	756
Hydro	60
Micro CHP	291
Solar thermal	1013
Biomass boilers	601
Ground & water source heat pumps	716

Figures supplied by Ofgem (FIT installation statistical report) and the Energy Saving Trust (Renewable Heat Premium Payment scheme regional statistics 2011)

MCS Certification figures 2011

Jan	Feb	Mar	April	May	June	
128	127	155	224	200	242	
July	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**TOTAL**
254	278	283	335	557	240	3023



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ECO PROPERTY

What: Renewables in installer's home

How: Using solar thermal,heat pumps and PV installed

Result: Savings of 99.6 per cent on annual gas bill

Kevin Collins, director at CB Renewables, has retrofitted his four-bedroom detached home with a renewable energy system complete with heat pumps and solar panels.

He says that he decided to kit out his home after comparing the energy costs pre and post installation and after spending £37,000 on equipment and installation, is now making savings of 99.6 per cent on his annual gas bill.

The value of his home could also increase due to the money created by the Feed-in Tariff (FiT) and other savings on energy bills, she says.

He added: "I find it a bit hypocritical when people try to sell green energy without using it themselves – this way I can look people in the eye when I talk about all the benefits.

"I have virtually wiped out my gas bill – as I only now use gas for cooking it only costs me around 11 pence each week. Putting underfloor heating in has also actually made my house bigger. I have been able to remove the gas fire and all of the radiators downstairs giving me an extra 10 sq metres and making it easier to place my furniture.

"Even with the FiT being slashed this year there are still plenty of incentives for property owners to go green, and of course opportunities for installers to capitalise on."

Leading by example: CB Renewables director, Kevin Collins,has installed solar thermal, PV and heat pumps in his home

HEAT PUMPS

What: National Trust invests in green technology

How: With the installation of an air source heat pump

Result: The provision of heat and hot water for visitor facilities

On a spectacular headland overlooking the Isle of Wight's famous lighthouse, the Needles Old Battery has installed a new heating system to meet 21st century energy efficiency requirements.

The Old Battery has a long history of being at the cutting edge of technology since being constructed in the late 19th century for coastal defence against the threat of invasion and the testing of space rocket engines at the site during the 1950s and 1960s.

The National Trust, which owns the site, has now opted for an air source heat pump from Dimplex which provides heating and domestic hot water for the tearoom and offices at the popular visitor attraction.

Isle of Wight-based Dimplex Renewables accredited installer Clarke's Mechanical, carried out the installation, replacing an old oil-fired boiler, which was said to be inefficient and expensive to run.

Also, to ensure the new system blended in sympathetically with its surroundings at this historic site, the parts of the LI 16 TE air source unit on show were painted battleship grey.

Paul Rayner, building surveyor for the National Trust, said: "The Trust has its own environmental goals, with key performance indicators on reducing energy consumption at its properties. Adding a renewable heating system is a great step forward, allowing us to meet and exceed the requirements.

"We'd been considering a heat pump for some time, as we wanted a more environmentally considerate solution for the beautiful Needles headland and a Dimplex heat pump was the natural way forward."

SOLAR PV

What: First community-based renewable energy project at an NHS site

How: Using solar PV panels installed by Eco2Solar

Result: Over 8,000 kWh a year of renewable energy produced for Stratford upon Avon Hospital

Worcestershire-based solar panel installer Eco2Solar has installed the first phase of a solar power array at Stratford upon Avon Hospital.

The innovative scheme has been put together by local energy co-operative Community Energy Warwickshire and South Warwickshire NHS Foundation Trust, which runs Stratford and Warwick Hospitals.

The project will see a total of 60 kilowatts of solar power installed at Warwick Hospital.

Community Energy Warwickshire, which was set up by Warwickshire residents to invest in renewable energy and help local communities save energy, has already raised over £100,000 of its target of £120,000 to fund the installations.

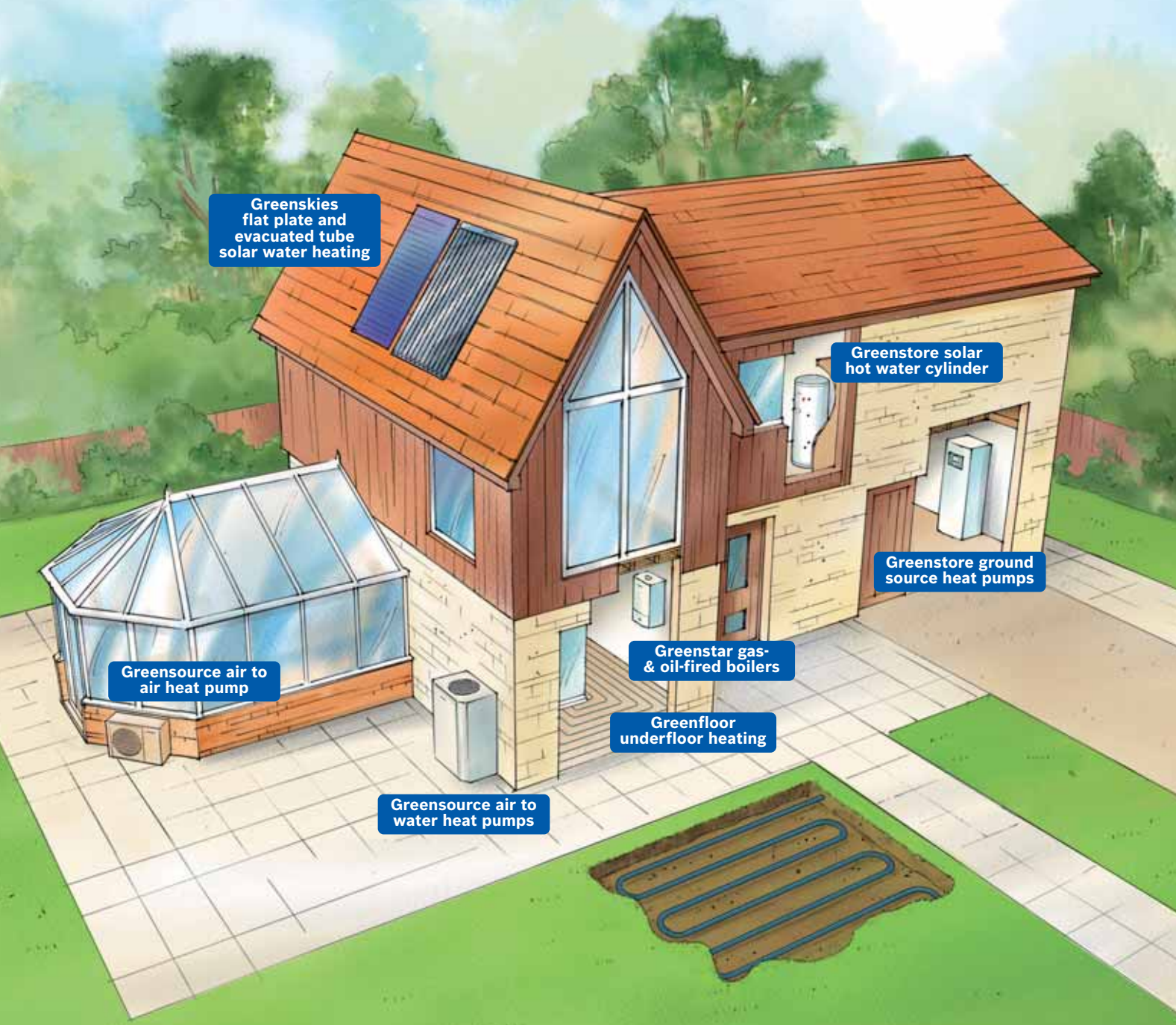
Paul Hutchens, managing director of Eco2Solar, said: "We were delighted to help Community Energy Warwickshire achieve its target of completing the Stratford installation before the government's December 12 deadline for reductions in Feed-in Tariffs. Eco2Solar deals with a number of community organisations who are working together to ensure renewable energy plays a larger role in their local area."

Keith Sinfield, the chair of Community Energy Warwickshire, added: "Eco2Solar worked hard and efficiently to help us get the Stratford installation completed on time. We are delighted our innovative partnership with South Warwickshire NHS Foundation Trust is already generating renewable energy and look forward to working with the Trust on energy saving initiatives."

New concept: The team behind Stratford Hospital's solar power initiative

Hot development: The National Trust embrace modern technology.

Photo courtesy of National Trust



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Who: Marc Payne, AP Electrical and Renewable Energy

What: AP Electrical & Renewable Energy is a family-run business based in Cardiff with Marc at the helm alongside his father Tony and brother James. The company directly employs 18 engineers who help provide electrical and solar solutions to their nationwide client base.

A family affair: Marc Payne runs the business alongside his father and brother

Gale force winds, traffic jams and beating the FiT deadline

Monday
After receiving an early morning pep talk from my Dad and mentor Tony, my first port of call is to see Bruce Cross at panel manufacturer GB Sol to run through the week's programme of work. After allotting the solar kits to specific properties and double checking that all inverters are matched correctly, it's time to head out to site to run through any issues with my foreman before heading back to the office to register all of last Friday's installations with the MCS.

Tuesday
With all this week's installs currently on track, I take the opportunity to post-inspect last week's work and attend a meeting with a tenant to explain how he will benefit from generating his own green electricity. Having worked with several housing associations over the years, we as a company understand the importance of helping combat escalating energy bills and find it gratifying to see people's lives improve having installed solar PV on their home.

Wednesday
With the finishing line now in sight, I head straight out to site in order to ensure that everything is going according to plan. With over 450 installs under our belt over the past year, I am delighted to see the teams installing so efficiently under mounting pressure. Working in partnership with Cadwyn Housing Association, we all understand the financial ramifications of failing to beat the Feed-in-Tariff reduction deadline and are desperate not to let anyone down.

Thursday
Have I spoken too soon? Yesterday's growing confidence is quickly shattered as we are greeted with a double whammy that threatens to turn the lights out on our solar mission.

Firstly, the weather proves just how cruel a mistress she can be by battering us with gale force winds that mean we cannot install the solar panels during the afternoon. Secondly, after seeing more traffic than the M25 during rush hour, the MCS website decides it can't cope any longer and stops us registering any more installs. This is not good. As you will no doubt already know, the MCS certificate provides the gateway to the FiT and without it… Well, let's not even go there! With no alternative but to be patient and pray for some divine intervention, what better time to go and see Father Christmas with my three-year-old niece Evie?

Friday
We're back on track! Its 1.20am and everything is registered up to date. Today is a big day and the clock is ticking. I spend most of Friday up on the roof, pitching in to make sure that we don't trip up at the final hurdle.

At 3.30pm it's all over. The last installation has been registered and we are home and dry. I speak to Bruce at GB Sol to thank him for his technical (and sometimes emotional) support and after some mutual back slapping, we immediately turn our attention to the post-apocalyptic era of the 21p FiT.

With panel prices falling in line with a sensible return of investment, we discuss how we can still make solar PV an attractive option to our clients. Also turning our attention to the Renewable Heat Incentive (RHI), we discuss some further in-house training at GB Sol to aid us in our preparation to become MCS accredited and begin installing solar thermal in early 2012.