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Trading places

It's that time again when much of the industry downs tools for two or three days and decamps to East London for renewable energy's biggest tradeshow – Ecobuild. The prevailing mood at these exhibitions has always served as a valuable barometer for wider industry feeling and sector confidence, with this year being no exception.

Admittedly we can expect a smaller show than 2013's spectacle, but I am still anticipating a far healthier dose of optimism and contentedness to linger within the ExCel's vast halls. Last year's show was after all set against a bleak backdrop of plummeting PV demand and a third damaging domestic RHI postponement lying in wait on the horizon.

Fast forward 12 months and the UK PV market is widely tipped to overtake Italy and Germany as the fastest expanding in Europe. Just as significantly, there is little now to suggest that the domestic RHI will be delayed a fourth time. As confirmed by DECC in last month's REI, there will be no extension to the RHPP stopgap beyond its expiry on March 31. DECC is also exhibiting both at Ecobuild and later in March at the National Homebuilding & Renovation Show within The Energy Saving Home area to reach out to consumers and installers alike whilst publicising its newest creation.

My suspicion has always been that the incumbent government is fast running out of time to secure any political dividend or legacy arising from launching the world's first renewable heat tariff. With a general election looming barely 14 months away, let's hope I'm right and expediency will take its course.

Lastly, amid all the frantic activity at Ecobuild, don't forget to check out the key exhibitors preview section on p16 of this issue and to say hello to the REI team on stand N2340.

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"Despite the confirmed reduction in FiT this year, we do not think this will deter continued investment in medium wind" Diana Popa, Vergnet p42

Events

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

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

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

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

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

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

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

HETAS publishes new guide

The 2014 version of the HETAS Guide of Approved Products and Appliances has just been published.

The annual guide is a reference tool for installers in the solid fuel and biomass industries with over 1,000 HETAS and MCS approved products listed. It has an index making it simple for installers to check if a product is MCS accredited and qualifies for RHI funding.

A spokesman for HETAS said: "One of the main advantages of using a HETAS approved product is that it has been independently assessed to meet building regulation requirements in England and Wales.

"Both specifiers and installers can be secure in the knowledge they are selecting a product which will comply with building regulations, and consumers will have the reassurance of choosing a product which has independent product approval."

The Guide is distributed free of charge to HETAS approved installers, retailers, sweeps and manufacturers with approved products. Additional copies cost £20 and can be ordered directly from HETAS, or the guide can be downloaded free of charge from the HETAS website.

Easy RSS develop installer design software

As we move ever-closer to the introduction of the domestic RHI, the focus is once again turning to training, design, assessments and calculations. With this in mind, Easy RSS has launched a new software package to help installers through this sometimes daunting process.

Easy RSS, a sister brand of Easy MCS and Easy Green Deal, felt that cloud based software covering solar PV, thermal and heat pump technology was also needed to help installers keep pace with updated MCS and MIS standards.

Some of the key functions of the software include:

- Cloud based and accessibility from a range of mobile devices
- Project storage allowing you to create and review current projects
- Utilisation of the latest in intelligent data set technology to ensure accuracy of location specific weather and irradiance data
- Heat pump sizing utilising EN12831 calculation method in line with the heat emitter guide for Domestic Heat Pumps
- Temperature star ratings and emitter sizing
- Onsite image upload
- Solar shading calculations with built in horizon chart
- Solar to load ratios
- Custom branded documentation output for installer and consumer

Sales and marketing manager, Thomas Farquhar, said: "With each Easy RSS software package customers will also receive the award winning MCS Certification Support which includes access to a personal MCS Mentor throughout the year. Alongside this, they will receive a bespoke Easy MCS Quality Management System which includes a cloud based and hard copy version along with an interactive record keeping function and support through any audits and spot checks.

"Once you apply for your Easy RSS Software you will be assigned a designated mentor who will be on hand to assist you in getting to know your QMS, support on recent changes and updates, adopting these processes into your business and training you on your new Easy RSS design software."

Sector slams EU renewable target decision as 'missed opportunity'

Thumbs down: The EU Commission has voted against imposing legally-binding renewable energy targets to 2030 on member states, preferring a continent wide approach

Industry leaders are united in their disappointment at the EU Commission's announcement in January not to impose extended binding renewable energy targets on a national level.

Although a 27 percent pan-European target has been set for renewable energy generation in 2030, in addition to a 40 percent reduction in greenhouse gases, no single nation will have a legislated target once current quotas are reached in 2020.

The message from the UK renewable energy industry is that the UK government, which was a leading opponent of any legally binding renewable target, has failed to realise the effect a growing green energy sector will have on job creation, economic growth and energy security.

The REA and STA led the wave of criticism of the negative message this sends to investors in low carbon technologies.

STA head of external affairs, Leonie Greene, said: "It is something that Europe has agreed a 40 percent emissions reduction target, albeit not high enough, but renewable energy stands at the heart of achieving this. From a climate perspective Europe needs to expedite, not slow, renewables deployment. From an economic perspective weakening ambition is nonsensical given the massive investments in renewables our international competitors are making.

"The 27 percent renewables target is no more than the Commission expects under business as usual, so the Council and Parliament must improve this significantly if it's to have any meaningful effect."

RenewableUK chief executive, Maria McCaffery, added: "While it is pleasing to see the EU Commission recognise that renewable energy is a key part of future energy solutions across Europe, the lack of ambition in not ensuring there are national binding targets for renewable energy is a disappointment. This is a missed opportunity for member states to take collective and serious action on the drive for clean, sustainable, renewable energy, which is the best option for reducing our carbon emissions."

UFW hosts Las Vegas competition

UFW is offering installers the opportunity to win a trip to Las Vegas to watch England's World Cup game versus Costa Rica.

The competition, which is open to all purchasers of NIBE air source or ground source heat pumps and biomass boilers, will see 11 lucky winners spend four nights in the gambling capital between 22-26 June 2014, with the football match viewing taking place on 24 June.

Return flights from Manchester, airport transfers, hotel accommodation and four evening meals are included. Fifty runners up will also receive a prize.

The draw will take place on Thursday 01 May at UFW's HQ in Leicester. All qualifying vouchers must be received by UFW no later than Wednesday 30 April and details of all winning tickets will be posted on the UFW website.

For further information and for the full terms and conditions of the competition please visit: **www.ufw.co.uk**

Extra £150k pledged to RHI training fund

The £500,000 RHI installer training fund launched by DECC last October has been topped up with an additional £150k due to high demand, climate change minister Greg Barker has announced.

Administered by GTEC Training, the scheme funds both installers wishing to move into the renewable heating market and an apprentice initiative. Based on early indications of uptake, DECC will increase funding to further bolster the supply chain as we approach the launch of the domestic RHI.

Cash boost: Climate change minister Greg Barker has announced another £150,000 to fund installers training in renewable heat technologies

Greg Barker said: "This announcement is a positive reflection on the industry's willingness to come on board with the government's push towards renewable heating. I am excited to be able to announce this additional funding, which should be taken as yet another sign of DECC's commitment to renewable heating and the imminent arrival of the domestic RHI this spring.

"By incorporating renewable heating into the businesses of many off-gas grid installers, consumers unsure about their next heating system will be able to more easily access knowledgeable, trusted sources of advice in their home."

An inconvenient truth

Despite claims it is more polluting than burning coal, the UK could meet 20 percent of its total energy use from bio-energy, claims **Stewart T Boyle** in his revelatory new book *The Sleeping Giant Awakens*. REI speaks exclusively to the book's author to find out why this is a must-read resource for anyone working in the biomass sector

REI: Can you give a brief synopsis of the book?
SB: Bio-energy is arguably the world's most important renewable source, yet is surrounded by confusion, controversy and poor perceptions. My book came out of frustration that the really exciting opportunities of bio-energy were being lost amongst a series of green NGO and vested interest company media campaigns. Many of these were using terrible science to distort and diminish the bio-energy contributions. The book tries to put the record straight.

Q: Greenpeace is one of the organisations to say it could be worse than burning coal. How have they got it so wrong?
As a former Greenpeace staffer I am embarrassed by this work, which tried to show a big 'carbon debt' for using trees for power production. The basic analysis used by them took a single extreme scenario out of 234 scenarios developed by the DECC sponsored scientists. Other scenarios show either no 'carbon debt' or a very small one. Is this bias responsible and fair? I think not.

Q: How sustainable is it to import biomass from far flung parts of the globe?
The key here is to do realistic and honest analysis – the UK doesn't have the biggest forest cover in Europe. Not all import transactions will make sense and it is important to use the wood in as efficient manner as possible. But if we adopt a 'perfection now' attitude as some green NGOs seem to argue for bio-energy, then solar PV and wind would never have happened.

Q: Can we really power up to 40 percent of global energy from bio-energy without significant impacts on lifestyle or land-use?
It wouldn't be easy to reach these sorts of targets. They are technically achievable, but very challenging and would require a high degree of coordination involving energy, food, transport, chemicals and land-use. The good news is that the technology to achieve the targets is largely available. Countries like Austria, Finland, Sweden, Brazil and Germany have adopted a strong bio-energy strategy so we have examples of how to do this.

Q: Is current government policy right for boosting deployment to required levels?
No – although the market is buoyant and accelerating, we are on course to meet only 50 percent of the renewable heat target by 2020 as projected by DECC. That's mainly due to confused policy messages, low political support and delays in bringing in the domestic RHI. The Treasury and DECC are more interested in saving money right now so there is real tension between the objectives of cutting carbon while cutting government budgets.

Q: How will your book appeal to renewable energy installers?
The book provides a practical and detailed look at the range of bio-energy fuel and technology options available in the UK market. It balances some necessary background information on bio-energy fuel sustainability, with solid real engineering advice based on hundreds of real biomass projects. It would be ideal to give to a client looking for re-assurance on bio-energy investments, including the perennial question – 'is there enough fuel?'

Q: What message should they take from the book?
Bio-energy in the UK is alive, vibrant and cost-effective! It is operating successfully in most parts of the UK economy and has the potential to use existing infrastructure for heating, power and transport. Don't believe some of the sensational media stories about bio-energy – look for the lobbyist behind this who is pushing the story.

To take advantage of a £2.00 REI reader discount offer for hard copy or digital versions, visit www.oneplanetmedia.co.uk/OPM-publications using discount code LW2013SGA1.

Essential training for Domestic RHI

The **HETAS BIOMASS COURSE** is a must this winter. Without it and the **MCS accreditation** you'll miss out on the **multi million pound** Domestic RHI launch in the spring. Euroheat, with our brand new assessment centre, are one of the few training centres that have a comprehensive range of boilers with which to gain hands on experience. With eight operational and seven cold boilers from 10 to 200 kW we cover all disciplines Not only that, we have experienced professionals and building service engineers who are experts in biomass heating solutions, providing an unrivalled level of training and depth of knowledge to heating engineers across all levels of the industry. We ensure that all candidates achieve accreditation and certification to the **highest standard possible,** with useful and relevant information.

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Independence Day

Over reliance on green government subsidies will fatally weaken the industry, argues **Stephen Knight**, Navitron

Future proofing: The renewables sector cannot control its destiny if demand is too closely linked to government financial incentives, says Navitron's Stephen Knight

With over 500,000 homes and businesses currently benefiting from government incentives like the Feed-In Tariff (FIT) and non-domestic Renewable Heat Incentive (RHI), the eco/clean technology industry has seen a tremendous jump in the number of systems installed since the programmes were introduced.

As a result of this success, many renewables companies and installers are now relying on the appeal of government incentives to sell their products and services to end-users.

As proven with the shortcomings of and cuts to recent incentive-driven government schemes, and how these failings affected related industries, action must be take to prevent the bright lights and short-term gains from influencing the success of the renewables industry.

The case against government policies

The demise of insulation specialists is a prime example of how reliance on public-funded schemes can have an adverse affect on a sector's success.

Prior to the implementation of the Green Deal during early 2013, many insulation companies were thriving due to successful government programmes that provided grants for insulation measures.

Action must be take to prevent the bright lights and short-term gains from influencing the success of the renewables industry

However, once the Green Deal came into effect and policies changed, many businesses were left without the key selling point they'd been relying on for years. As a result, installation rates dropped by over 75 percent over the course of just 12 months.

The double-glazing sector also fell foul to reliance after pinning their hopes on the success of the Green Deal – which was designed to offer loans and cash back for energy saving installations. During the introductory year, however, only one home utilised the Green Deal for double-glazing due to the policy's restrictive funding criteria.

We must rethink the way we sell to reflect the ageless benefits renewable technology has to offer

Beware of changes

Currently, the renewables industry is in a very similar situation to those previously mentioned, with many solar electricity companies thriving due to the Feed-In Tariff and many solar heating businesses pinning their hopes onto the uncertain success of the domestic RHI incentive.

Instead, as an industry, we must focus on changing end-user attitudes about the benefits of sustainability and encourage them to consider a switch to eco solutions.

At the moment, it seems that most consumers believe we are selling a way to earn profit through the government, which is not what we do. We sell ways to save money on utility bills while reducing a building's overall environmental impact. Anything else is an added benefit.

To remedy this misconception, industry professionals should focus on emphasising the amount of money that can be saved on annual bills instead of how much can be earned through FIT or RHI incentives; by showing a building's current carbon footprint compared to what it could be reduced to with renewable technology.

Publicity surrounding government has clouded consumers' views on renewable technologies, creating an unstable market based around uncertain elements. To fix this, we must rethink the way we sell to reflect the ageless benefits renewable technology has to offer.

As easy as it is to rely on government incentives to bring in new business, it's just not a sustainable way of growing as an industry. Instead, installers must sell the idea of green and savings, along with high-quality products, positive return on investment and reliable installations completed by friendly professionals.

The double-glazing sector fell foul to reliance after pinning their hopes on the success of the Green Deal

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Pride and prejudice

With all installation sectors traditionally suffering from huge gender imbalances, REI asked Zenex Solar's **Liz MacFarlane** to investigate how welcoming the world of renewables is to women

Being asked to write about life as a woman in the world of renewable technology couldn't have come at a more appropriate time. As I write, there is a debate raging in our office about whether we should employ glamorous agency models to drum up support among the audience at EcoBuild. You can imagine how we are divided. Thank heavens Zenex's workforce is over half female. The ceo, who is also my older brother, has wisely chosen to stay out of the discussion. He does however have a habit of occasionally calling me 'good girl' which can be slightly embarrassing. It's probably a clever ploy on his part to make me all the more determined and to prove my worth.

Recent articles by other women in industry have painted a picture of antiquated discrimination. Until today's debate, I can't say I'd really faced it, but maybe I'm an exception. I went to an all-boys school as it turned co-ed, so just to be sure I hadn't been desensitised by that experience, I decided to approach some other female figures. I'm so glad I did. It was fascinating.

We all had a few things in common such as backgrounds in typically masculine industries. For example, Alison Finch, chairperson of So Gecko and executive committee member at the BPVA, was managing 50 men on night shift in a pet food factory at the age of 24. Louise Bishop, marketing manager with Krannich Solar cut her teeth in the motor trade where she faced archaic male attitudes on a daily basis; and at the age of 24 I was selling drugs for erectile dysfunction to urology consultants and giggling male GPs.

All the women I spoke to are high achievers with more than a few successful plates spinning.

Phyllis Prior Boardman, chief executive of Green Deal Consortia has just received a British Empire Medal in the New Year's Honours list for services to energy efficiency and her story should give confidence to any woman facing barriers.

"I am constantly encouraging friends and others into this industry if I feel they too can make a real change," she said. "I tell them of the opportunities ahead, the chance to create and expand, provide training opportunities for our young people and above all, give hope to many out of work.

"We have to showcase role models so others will follow. I am very keen to do this and make it happen for many other women," she added.

Krannich Solar's Louise Bishop felt that the gender imbalance is much less marked in the distribution sector of the industry than in installation. She said: "With many colleges and other training providers now offering renewables courses, I would hope that there will become a more balanced male-to-female ratio among those entering the industry."

Finally, I asked each of my industry peers what they'd say to a friend considering entering the industry. Alison Finch of So Gecko summed up: "Personally, my love for the industry grows with each passing month. It's a relatively new industry but one that is here to stay due to the growing requirement for sustainable energy sources.

"The industry is small enough to get to know who is who and it is packed full with decent, sophisticated, intelligent and innovative people who share a common aim. I feel part of something special."

And our office debate about the Zenex promo models? You'll have to come and see us at Ecobuild to find out who won that one.

Changing times: Operating in a traditionally male-dominated industry, the majority of Zenex Solar's senior roles are filled by women including (L-R) Zara Thorn (South West account manager), Liz MacFarlane (sales director), and Cath Lister (sales support manager)

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Pool of opportunity

If you want a shot at winning public sector work, the key is preparing a faultless pre-qualifying questionnaire (PQQ) and tender documents. **Kevin Dowd**, network operations manager of the National Skills Academy for Environmental Technologies, offers advice for businesses looking to tap into the public sector's rich rewards

According to the Federation of Master Builders (FMB) public sector construction contracts are worth more than £37bn per year in the UK – suggesting a substantial pool of contracts is up for grabs for the dedicated and professional building services engineering firm, particularly those with renewables expertise.

The procurement process in the UK has a reputation for being time-consuming, but completing the lengthy paperwork involved will certainly pay-off as securing a public sector contract offers many benefits, including:

- Easier access to future contracts and opportunities
- Prompt payments within agreed contract terms
- A fair selection process
- Raising the profile of your firm with big-name clients.

Pre-qualifying questionnaires (PQQs)

Contracts can be tracked in a variety of ways; through newspapers, trade magazines or on websites, such as **www.contractsfinder.co.uk**, which has information on jobs worth over £10,000 with the government and its agencies.

A business is then required to express its interest through a PQQ, a document which demonstrates how an organisation can meet the requirements of a project. Assessment is based on a pre-set criteria focusing on an organisation's financial position, ability to deliver, quality standards, policies on health and safety, sustainability and equal opportunities.

Once a business has 'passed' a PQQ, the document will stay eligible for a set period. Even if you don't win the contract, compiling these documents is a useful process that will help clarify the aims, strengths and weaknesses of your organisation.

A competitive tender

If you've been successful at the PQQ stage, you will be invited to tender (ITT). It is important to carefully read the bid documents and requirements laid out, ascertaining whether your business is capable of delivering the services stated in the brief.

To complete a tender you need to complete the following tasks:

- Carry out background research into the requirements of the job and purchaser
- Write the bid
- Plan the delivery method
- Identify partners where necessary
- Keep informed and manage the bid stages
- Produce a professionally presented bid
- Price up the job – this is tricky, particularly in our current economic climate where competition can be fierce; proving too cheap or too expensive could see your bid lose out to others. Carefully consider the following:
  - Rates for staff and time
  - Rates for specific tasks (if applicable)
  - Fixed costs
  - Material costs
  - Travel and transport

A company's training policies may also come under scrutiny, so if your business is associated with reputable training providers, such as the National Skills Academy for Environmental Technologies, it will go some way to demonstrating your commitment to quality training, legislative requirements and industry standards.

You may also choose to include case studies or testimonials of clients you have helped in similar projects, reaffirming your company's ability to deliver on-time and on-budget.

Waiting game: Securing public sector contracts involves lengthy paperwork and administration, but is well worth the wait, says Kevin Dowd, network operations manager of the NSAET

Big business

Can your business rise to the challenge and take on the larger, more lucrative projects that the public sector and local authority arena presents? Get yourself on a preferred supplier list and put together convincing tenders to help you realise the bigger profit margins and raised profile that working in this arena can bring.

The National Skills Academy has produced guides to help support companies when compiling PQQs and tendering documents, which are available to purchase from the NSAET website.

March of time

Paul Stephen and **Watson Carlill**, director at Future Renewable Energy, look back at the key milestones for installers in the ever-changing world of renewables

Pre – 2010

REI
Sep 2008
First issue of Renewable Energy Installer is published

Feed-in Tariff (FiT)
Oct 2008
Feed-in Tariff (FiT) policy is first announced

MCS
Nov 2008
BRE Global completes government contract to develop MCS. Administration of MCS transferred to Gemserv by DECC

Climate Change Act
Nov 2008
UK becomes legally committed to an 80 percent reduction in greenhouse gases by 2050

MCS
Apr 2009
MCS registration for installers replaces Clear Skies and MDP schemes

Green Deal
Feb 2010
Green Deal proposal passed through the House of Lords

RHI
Feb 2010
RHI policy first announced, public consultation begins

2011

FiT
1 Apr 2010
FiT launches for PV systems installed since 15 July 2009

Low Carbon Programme
24 Mar 2010
Scheme closed to be replaced by RHI (non domestic) in Nov 2011

RHI
Mar 2011
RHI policy details announced

REI
Jun 2011
Renewable Energy Installer goes bi-monthly

FiT
Aug 2011
Lower rates for large scale installations comes into force

FiT
Oct 2011
DECC opens consultation to reduce FiT for domestic systems from 43.3p/kWh to 21p/kWh from December 2012 as spiralling installation rates threaten to blow the budget

Green Deal
Oct 2011
Green Deal policy becomes legislated for in Energy Act

RHI
Nov 2011
Non-domestic RHI scheme opens

RHI
Nov 2011
Renewable Heat Premium Payment (RHPP) is launched

FiT
12 Dec 2011
Campaigners win judicial review of DECC's proposed December tariff reduction date. DECC vows to appeal decision creating widespread uncertainty in the PV industry

The Carbon Plan
Dec 2011
Published by DECC to set out the government's vision for a nation powered by renewable energy

2012

FiT
25 Jan 2012
Government loses legal appeal. Cuts ruled 'unlawful' as the proposed date fell before the end of the consultation period. Cuts are delayed until 01 Apr 13

REI
Sep 2012
Renewable Energy Installer goes monthly

FiT
Aug 2012
FiT reduced to 16p/kWh for <4kWp systems. Tariff duration reduced to 20 years

FiT
Jul 2012
New FiT rates announced for non-PV technologies including a decrease to the tariff for wind

FiT
May 2012
DECC announces quarterly degression plan to regularly reduce FiT based on previous installation rates

FiT
01 Apr 2012
Properties now require an EPC rating of A-D to qualify for higher FiT payments. Those without will receive 9p/kWh

RHI
Mar 2012
DECC announces the domestic RHI will now launch in the summer of 2013

FiT
Mar 2012
UK PV installed capacity passes the 1GW mark

FiT
01 Apr 2012
New 21p FiT rate comes into force for <4kWp installations

FiT
Feb 2012
DECC launches consultation for changes to the scheme for non-PV technologies

Renewable ENERGY INSTALLER THE BUSINESS OF MICROGENERATION

Green Deal
01 Oct 2012
Green Deal officially launches but finance plans cannot be taken out until 28 January 2013

FiT
01 Nov 2012
First FiT degression date. The tariff falls by 3.5 percent for <4kWp systems to 15.44p/kWh

RHI
Nov 2012
DECC publishes proposals for the domestic RHI scheme including tariff rates

FiT
Dec 2012
DECC announces that no degression will occur on 01 Feb 2013 due to insufficient installation rates

2013

Green Deal
28 Jan 2013
Green Deal finance becomes available to the public. Government bankrolls a £125m cashback scheme and £2m marketing campaign to boost uptake

RHI
12 Jul 2013
DECC confirms final tariff levels for domestic RHI but delays launch for the third time until Spring 2014

PV
May 2013
Conclusion of EU/China anti-dumping row: 47 percent import tariffs imposed on Chinese PV products

PV
15 Aug 2013
Chinese PV manufacturers sign up to a Minimum Price Agreement with European Commission – avoiding the need for tariffs

RHI
Spring 2014
Expected introduction of domestic RHI

FiT
01 Apr 2014
FiT degression date for all non-PV and PV technologies

RHPP
31 Mar 2014
Expiry date for RHPP

Green Deal
28 Jan 2014
Green Deal marks its one year anniversary having logged 130,000 assessments but only 626 live plans

EU
22 Jan 2014
EU commission votes not to extend binding renewable targets to 2030

2014

Energy Bill
19 Dec 2013
Energy Bill receives Royal Assent

RHI
04 Dec 2013
ASHPs included in non-domestic RHI and several tariffs increased to boost deployment

Ecobuild 2014 – The only place to be

It's March, the train tickets are booked and you're heading to London's ExCeL on 4-6 March, but how can REI readers make sure they get the most from their trip to Ecobuild 2014?

Ecobuild is the biggest event for the renewables industry, and the most comprehensive showcase of sustainable construction products.

With features displaying thousands of products, from both the UK and abroad, it's a great opportunity for installers to get up-close-and-personal with the latest technologies on the market, and develop the right contacts to drive business forward.

A good place for installers to start is the Practical Installer feature. With 17 of the industry's top suppliers joining Plumb Center to showcase the latest solar, biomass, heat pumps and water efficiency technologies.

Many manufacturers will also have their own exhibits, and will be keen to talk to installers about their latest products, offers and ideas for 2014.

Solar City, sponsored by SMA Solar, will feature seminars and practical demonstration covering all aspects of the solar PV market in the UK. Visitors can listen to live debates and practical case studies from industry experts.

The conference and seminar programmes have been very popular with Ecobuild visitors and will this year feature speakers from leading organisations and government departments including: DECC, The Renewable Energy Association, Innasol, BRE, Rexel, Arup, Wolseley, and AECOM.

Sessions will cover topics such as 'Community energy or the Green Deal?', 'Domestic RHI: An energy boost for installers & householders' and 'The business case for air source heat pumps', so there's plenty to interest installers who are looking to get ahead of the game.

Installers who want to squeeze everything in should check out the Ecobuild website **www.ecobuild.co.uk**. There's a complete list of all the exhibitors, plus the full seminar and conference timetables.

Staying on top

Swiss inverter manufacturer SolarMax will be launching its new range of HT series string inverters at this year's Ecobuild. The powerful HT series, with its new multi-tracking concept, is aimed at the fast-developing commercial rooftop market.

The HT series will be available in three models: 30 kW and 32 kW output each with four MPP trackers, and 32kW output with two MPP trackers. Designed for quick and easy installation, and with the latest communication and monitoring functionality, SolarMax says the HT series inverters combine maximum flexibility with high cost efficiency. With their low system costs and high performance yields, they promise to provide the perfect solution for industrial and commercial solar power plants and will be available from June 2014.

S1910

High and mighty: SolarMax's new HT series of string inverters is aimed at the commercial roof mounted PV market

Center point

Plumb Center says it will be focussing on helping installers get the most from the RHI at its stand, by offering information and advice about the technologies covered by the scheme, and the qualifications needed to carry out the work.

For the first time this year, the Plumb Center stand will be located next to Practical Installer, one of Ecobuild's most popular attractions.

All the literature for the products on display at Practical Installer will be available from the Plumb Center stand, so installers can get more information about installation and maintenance.

Head of sustainability and familiar face Tim Pollard will also be heading to Ecobuild, keen to discuss the latest industry topics.

Tim is taking part in two seminar sessions and a conference this year, covering a range of areas including the renewables market, Green Deal and the domestic Renewable Heat Incentive (RHI).

"Ecobuild 2014 is one of the most important events in the diary for us," Tim said.

"We're really looking forward to speaking face-to-face with installers about the big issues affecting the industry in 2014; and we hope to see you there."

Visitors can see Tim at the following times and locations:

- **Tuesday 4 March – 10:45 – The Renewables Market, Incentives, Payback and Regulatory Drivers – The Green Energy Zone**
- **Tuesday 4 March – 15:00 – Localised Energy or Green Deal – Ecobuild Arena (North Arena)**
- **Thursday 6 March – 10:30 – Benefitting from the Domestic Renewable Heat Incentive (RHI) – The Green Energy Zone**

N1720/21

Main man: Plumb Center's head of sustainability Tim Pollard is taking part in a range of seminars and conferences at Ecobuild 2014

Certified solutions

British-based K2 Solar Mounting Solutions and its parent company K2 Systems GmbH is dedicating its presence at Ecobuild this year to the new MCS certification of mounting systems, which becomes mandatory from April to claim the Feed-in Tariff.

Renowned for easy fit modular mounting systems, the company will also be exhibiting its range of installing fasteners, low ballast flat roof systems and other mounting products.

Kai Schuebel, K2 Solar Mounting Solution's md, said: "Many years of experience and our attention to service make K2 a pleasant business partner. International customers appreciate the quality of our reliable carrier systems for use on sloped roofs, flat roofs as well as ground mounted and special projects."

S2046

Direct line: The K2 team will be on hand to answer questions about new MCS certification for mounting systems

Hot prospect

New from Windhager at Ecobuild 2014 will be its latest development The BioWIN 2.

The BioWin 2 has been designed to be a 'space conscious' wood pellet boiler and can be installed within an alcove, as it is said to require no servicing clearances either to the left, right or the rear and minimal clearance to the front.

BioWin 2 is available in outputs from 10 to 26kW and comes with a host of features including fully automated cleaning and ash removal to an integrated ash container.

The new boiler is available as a hand feed version from its integrated pellet hopper or as an auto feed boiler from a bulk pellet store.

S410/11

High performance: Windhager's BioWin 2 is available in outputs from 10 – 26kW

Power ranger

Ginlong Technologies will be exhibiting the full Solis inverter range at this year's show, available from 1–15kW.

Sandy Woodward, Ginlong's UK director, said: "The range now includes 6kW, 10kW and 15kW three phase inverters which are perfect for larger commercial installations at market leading price points.

"Designed and manufactured completely in-house by Ginlong's world leading research and development team, the range boasts dual MPPT on all units from 2.5kW facilitating small dual aspect installs; the single phase inverters are also all G83/2 approved."

S2326

Smart choice: Ginlong's Solis inverters are available from 1-15kW

Adding value

Solfex Energy Systems, part of the Travis Perkins group, will be exhibiting at Ecobuild 2014 alongside a number of the group's other brands.

Technical representation from the solar thermal, PV, heat pumps and underfloor heating divisions will be available to answer product questions and demonstrate other added value services offered to installers such as detailed indemnified system integration designs with CAD drawings.

Stuart Cooper, managing director of Solfex Energy Systems, said: "Ecobuild is a fantastic opportunity for manufacturers and suppliers to showcase their latest products, innovations and also the services they can offer. It is also an ideal opportunity to meet their customer base. We have exhibited at EcoBuild for the past five years and it is a very important event on the renewables calendar which we wouldn't miss."

N610/11, N620/21

Strength in numbers: Solfex is exhibiting from the same stand as other Travis Perkins group companies

Waxman doubles up

Waxman Energy is to launch its new online installer portal at Ecobuild enabling customers to order products safely online during out-of-office hours.

Also on display will be Waxman's newest battery storage system for solar PV, produced by Netherlands-based Nedap – the PowerRouter.

Technical staff are on hand to advise on Waxman's PV module range from manufacturers including LG, Trina Solar, Phono Solar, BenQ and Hyundai.

Waxman Renewables, also part of the Waxman Group, will be sharing the stand to showcase its range of renewable heat technologies. As the UK's exclusive distributor of Austrian manufacturer, TiSUN, Waxman Renewables will be presenting its solar thermal products alongside biomass pellet boilers from WES and La Nordica, plus heat pump systems by Dimplex and Daikin.

N1910

Joining forces: Waxman Energy and Waxman Renewables are teaming up to share a stand and widen the range of products on display

Learning exercise

Mitsubishi Electric will be running free, 10-minute seminars on its Ecobuild stand so installers can hear what the Renewable Heat Incentive will mean for them and their customers.

The heat pump manufacturer's stand, which is located at entrance N8 on the north side of the ExCel, has been specifically designed to allow visitors easy access to the company's heat pump experts in order to understand how they and their customers can benefit from the introduction of the RHI, this spring.

John Kellett, general manager of the heating division, said: "We will be promoting the advantages of the market-leading Ecodan range, whether for domestic or non-domestic situations, in both old and new-build properties and will have staff available to explain what the RHI scheme means to both domestic and non-domestic heat pump projects."

N2210/11

Show and tell: Mitsubishi will be demonstrating to installers how its Ecodan heat pumps have a wide range of applications

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Winning combination

Natural Technology Developments will be showcasing its Solar Angel PV-T (PV/thermal) panel, which has been undergoing tests prior to its commercial launch.

Manufactured by the Northumberland-based company, Solar Angel uses one slim line dual generation panel to produce both electricity and hot water. According to Natural Technology Developments, it is due to receive MCS accreditation imminently.

Installers, architects and specifiers will have the chance to see Solar Angel and learn more about its benefits. Due to its unique cooling system, Solar Angel generates more than four times the energy of standard PV; a performance that has been independently verified by international accreditation facility, the Florida Solar Energy Center.

S2218

Perfect platform: Natural Technology Developments is launching its PV/ thermal panel – Solar Angel – at this year's show

Helping hand

Sibert Solar will be running exclusive offers for PV installers before and during Ecobuild including the chance to win a tablet computer. Discount/offer codes will also be available for use when ordering online.

Andy O'Leary, Sibert's business development manager, said: "We look forward to meeting new and existing clients at this important event in the UK calendar and invite all the readers of the Renewable Energy Installer to come and talk to us about how we can help with the configuration, protection and procurement of your installation."

S2004

Benefit your business

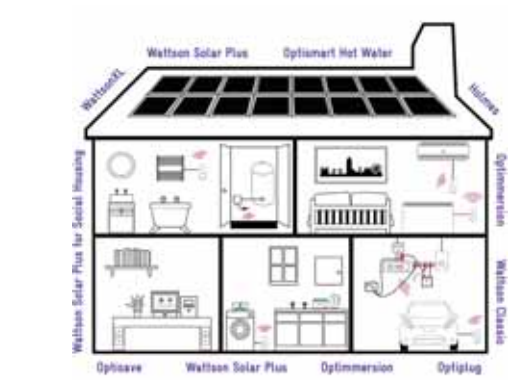
Attendees at Ecobuild this year will be able to visit Specflue's stand to find out how to best position their businesses to take advantage of the domestic RHI rollout.

As well as viewing the company's products, installers will be able to talk to the technical team behind Specflue's renewable heating range which includes thermal stores, pellet stoves and boilers. Members of Specflue's training facility will also be available to give advice on the training necessary to enable installers to prepare themselves for the expected business growth in domestic renewable installation work.

Jed Smith, head of business support services, said: "Specflue is a bit of a one-stop shop when it comes to renewables. Visitors to our stand can come with absolutely no knowledge of the sector at all and walk away with a plan of action to get them prepared for RHI."

N1935

Citizens' advice: Specflue's technical team is available to discuss the company's range of thermal stores, pellet boilers and stoves



Mass marketing: Energeno is targeting housing associations and social landlords to spread the benefits of PV to tenants

Show and tell

Energeno will be at Ecobuild this year showcasing its offering for housing associations, social landlords and free-solar companies. The company's focus is on the shared benefits of PV technology for tenants, landlords and installation companies.

On its stand, Energeno says it will demonstrate how social landlords can benefit from increased tenant yield, rent yield and sign-up with both the Optimmersion intelligent immersion controller, and Wattson Solar Plus energy monitor.

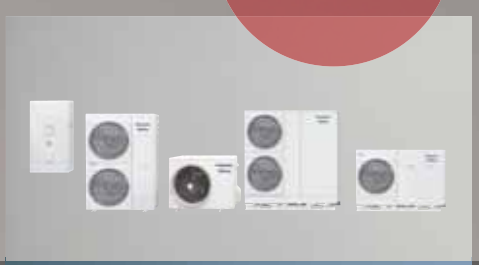
Energeno is also looking to talk to PV businesses looking at cost effective technologies to offer its customers, or homeowners looking for ways to maximise the use of solar power.

S2001

Panasonic

FOR REAL SAVINGS AT HOME, CHOOSE THE AQUAREA HEATING SYSTEM

5 COP HIGH EFFICIENCY



Panasonic's Aquarea range of heat pumps delivers major energy and environmental savings thanks to its incredible efficiency

Aquarea is part of a new generation of heating systems that use a renewable, free energy source (the air) to heat or cool the home and to produce hot water:

- Extremely high efficiency (COP of 5.00 for 3kW unit)
- Line up developed for low consumption homes (starting at 3kW)
- Line up developed for retrofit with dedicated control system
- Easy to control with your smart phone (Using an optional interface)
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- Environmentally friendly refrigerant — R410A
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HIGH CONNECTIVITY

- Boiler connection — RETROFIT
- Solar panels connection — SOLAR KIT
- Domestic hot water — DHW

heatingandcoolingsystems

AQUAREA

www.panasonic-heating.co.uk

MCS Reminder:

Updated Standards and Competency Criteria

As previously announced, MCS released updates to all heat technology installation standards on 16th December 2013. All installers must comply with the revised standards by 16th March 2014.

Please be aware that the updates are significant and you must take action to ensure you are ready to implement the updates by 16th March 2014. Therefore please make sure that you have reviewed the revised standards and that you have updated your processes accordingly. A summary of the changes can be found via the MCS website.

In particular we would like to highlight the following changes:

- An MCS compliance certificate must be completed for MCS installations and a copy supplied to the system owner. These compliance certificates confirm that you have met the requirements of the MCS standard and records key information relating to the installation. A copy must be supplied to the customer and will be required if the customer wishes to apply for domestic RHI where the installation is eligible. Copies of the compliance certificate are available from the installer standards section of the MCS website.

- Solar thermal and heat pumps: MCS installers are required to attach a label to the installation as outlined in the appendices of both the solar thermal and heat pump standards.

- Solar thermal – domestic hot water installations only: A new solar thermal energy calculation methodology has been released which is outlined in the document MCS 024. In order to assist MCS installers in making these calculations a calculator has also been released called the Thermal Solar Performance Energy Calculator (TSPEC). Installers must use this calculator when working out the annual energy input kWh/year and enter this figure into the MCS Installation Database (MID).

- All Heat Technologies: For all heat technology installations intended for the domestic RHI, MCS installers are now required to meet the requirements of the MCS domestic RHI metering guidance.

Competency Criteria

In addition to the above changes to the heat standards, all MCS standards have been updated with a clearer path to MCS certification for installers. Appendix A in each Installer standard details this revised Competency Criteria. The new Competency Criteria, supporting guidance framework, and IT tool will guide installer companies in demonstrating how their employees combined industry experience and formal training demonstrates the relevant competency for the company to gain certification. The framework places an equal emphasis on experience and on qualifications, because we know the key is to help installers show Certification Bodies that their company is competent. This is a big step forward in making the whole process more transparent from the installer's perspective.

Although the changes do not become mandatory until 16th March 2014, you may begin working to the new standards now. Therefore we strongly recommend that you review and update your processes as soon as possible so that you are ready by March 2014.

Pollard's Patter

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

Let's hope when we look back on 2014 we'll have made major strides towards convincing the public, business and government that the best and only way to effectively cope with energy price inflation (and excess carbon emissions) is to USE LESS ENERGY.

Step 1 – understand where you use energy.

Step 2 – understand how to reduce your energy demand. In short, generate heat and hot water efficiently, don't let it escape and only make what you have to.

There we are. We can all rest easy now.

Sadly, of course, there is still much to do to get this message understood, and even more to do in achieving these goals. How can we get people to understand and then transfer that understanding into action? Do we have the right products and the right people to deliver the solutions and provide access to both at the time and place we need them? Is there enough financial incentive to stimulate the demand and supply of more efficient properties?

One thing is plain: we are all going to have to work together towards this goal and that might mean some uncomfortable alliances between people not known for being close. We may have to challenge long held conceptions, break barriers and forge new relationships.

Renewables will form a part of the solution, but we need to work hard to educate and communicate the real facts about what is possible and appropriate for each individual circumstance.

TECH TALKING

Hidden dangers

With the domestic RHI so close to finally becoming reality, there is a grave danger that insufficient levels of skills in the industry could expose a weak link, says heat pump specialist **Bob Long**

So significant is this pending issue that we here at Eco-Innovate Ltd have dedicated over two years of research, design, development and prototyping, to developing a small number of system components, that effectively de-skill much of the design process – thereby simplifying installations to guarantee reliability, economy and customer satisfaction.

The RHI represents a much needed boost to the heat pump industry, but the practicalities of finding enough skilled labour to deliver the anticipated volume of sales is a little more daunting.

Currently (pre-RHI), many of the heat pump installations installed in UK are owned by enthusiasts who have embraced low-carbon technology and have a particularly good understanding of their chosen system.

It is not uncommon for green enthusiasts to mix multiple technologies such as heat pumps, solar thermal, PV and perhaps even a log burner too!

In an ideal world, where cost of implementation is not an issue, the low carbon impact of multiple-technology systems is commendable. But to the majority of new customers enticed by the RHI, a heat pump will represent nothing more than an economical heating alternative for the home.

In the anticipated wave of new customers, there will be no room for error and excessive heating bills for whatever reason will not be tolerated.

Most households in UK will currently have only one type of heating technology such as a gas or oil boiler and, understandably, will have little interest in the technicalities of the heating system.

With this in mind, it is reasonable to assume that the majority of domestic heat pumps installed under the RHI will operate as a single heat source, negating any need for the heat pump to interface with other technologies.

If this assumption proves to be correct, much of the complexity, built in to many high-end heat pumps, could be eliminated, and would simplify an installation significantly.

Although there is sound argument in support of increased efficiency through sophisticated control, there is absolutely no merit in economic losses through poor adjustment.

Some heat pump manufacturers have incorporated control electronics with such a high level of sophistication that in-house training is essential before allowing installers to make a purchase.

Even with all this emphasis on training, there remain an insufficient number of skilled installers for the anticipated uptake of heat pump technology.

When designing a heat pump system, the basic considerations are very similar to a conventional fossil fuelled system:-

a) Correct size of boiler, sized to match the highest anticipated heat load
b) Adequate water flow rate
c) Suitable size of emitter
d) Domestic hot water requirement based upon number of occupants/bathrooms

There is however one major difference: A fossil fuelled heating system can be oversized without much increase to installation or running cost, ensuring there is more than enough capacity for any eventuality.

Beyond this, fossil fuelled systems are relatively tolerant to operating at higher temperatures, and systems can be tuned to meet requirements by simply adjusting the working-fluid temperature, and duty cycle.

A heat pump powered system cannot provide this flexibility, which means that much higher accuracy is required in the initial design stage, and precisely selected components such as water pump(s) and heat-emitters are essential to success.

In the passage of time, familiarity with heat-pump technology will grow, and installation procedures will evolve into a straightforward, manageable process.

RHI – are we ready?

As we gear up for the launch of the domestic Renewable Heat Incentive (DRHI), **Robert Burke**, HETAS, asks: Is the industry is ready for it?

Given that there have been considerable delays in launching the scheme, it's understandable that people may have been hesitant about preparing for the DRHI. But now that the initiative will be implemented this spring, HETAS is now seeing a marked increase in the number of gas and oil engineers who are getting ready for the scheme by registering as MCS approved installers.

Although the government's training voucher scheme has provided some welcome incentive, installers need to be prepared for the DRHI now. For a long time we've all been told that the scheme is coming, and because of the delays there now has to be a real trust that it's going to happen. HETAS is just one of the organisations that has been working behind the scenes to get ready for it.

At the moment HETAS is the only organisation with a biomass training and assessment programme that meets the needs of DRHI and MCS, and in order to welcome the DRHI we've simplified our MCS application process for installers. The network of HETAS approved training centres has also expanded, and there are savings to be made from becoming registered with the HETAS competent person scheme at the same time as MCS.

With DECC's commitment and OFGEM's professional approach, our initial feelings are that the DRHI scheme will be a success. The application process for the householder seems to be very straightforward and user friendly, which bodes well for a good level of take up. To qualify for DRHI funding householders will firstly need to have a Green Deal assessment – and 100,000 of those have already been done. Qualifying installations by an MCS approved installer with a DRHI approved product will then be eligible for 20 years of funding paid over a seven year period. So the scheme is very accessible for homeowners and it's likely there will be a good take up rate.

Crucially, installers (and householders) should be aware that only MCS products that are on OFGEM's DRHI approved products list will be eligible for the scheme.

DRHI approved products only include:

- Air to water heat pumps
- Biomass-only boilers and biomass pellet stoves with back boilers
- Ground (and water) source heat pumps
- Flat plate and evacuated tube solar thermal panels

Whilst other technologies are included in MCS they are not included in DHRI. HETAS has been asked by the government to hold the list of biomass boilers which meet the emissions requirements for DRHI and this will shortly be available online.

So behind the scenes there is a lot happening to make sure the correct infrastructure is in place for a successful scheme. But, it will only succeed if we have enough trained and registered installers. For companies already working in the gas and oil sectors, adding biomass to their existing skills should be relatively straightforward. Becoming registered with HETAS for biomass would also enable installers to self-certify stove installations which is a fast growing area of the heating market

Two minutes with . . .

Q: Who are you?
Michael Wright – owner and director of Yorkshire Heat Pumps and Michael Wright Kitchens & Interiors.

Q: What do you do?
My background is in high-end kitchens, interiors and whole house refurbishments. Particularly over the last couple of years, I've found myself incorporating renewable heating technologies into customers' projects. A logical extension to the interiors business was to introduce a renewables service – or in this case a sister company which enables me to thoughtfully and seamlessly integrate renewable heating into customers' homes.

Q: Where are you?
I operate both businesses from a showroom at the amusingly named Blubberhouses in North Yorkshire, equi-distant from Harrogate and Ilkley.

Q: How's business at the moment?
It's getting busier and busier as domestic customers look to benefit from the Renewable Heat Incentive payments from spring next year. SMEs are also warming to the potential in biomass for heating commercial premises and earning non-domestic RHI over the next 20 years.

Q: How could it be better?
Without the negative press about whether the RHI will launch on time and the negativity surrounding the Green Deal which has affected consumer confidence in government energy saving initiatives.

Q: Who do you admire in renewables?
The Swedes. They are miles ahead of us and we could learn so much from them. I always tell my prospective clients to look at how people in cold countries heat their homes.

Q: What's the best business advice you have ever received?
To stay true to your own values and principles. This has never been more important than it is now with so many inexperienced and under-qualified operators looking to capitalise on the growth in renewables and make a fast buck!

Q&A

JOHN KELLETT

Mitsubishi Electric

REI: What have you got planned for 2014?
JK:I see this as a big year for product development with lots of exciting new functionality, control and products to extend the range and simplify things for installers.

The heat pump market has already come a long way, but we realise that as an industry, we still need to increase awareness of the benefits that renewable heating can offer.

We will therefore continue reaching out directly to the market with our Ecodan range and plan a number of roadshows around the country, targeting installers, social housing providers and developers.

What do you see as the growth area for renewables?
The domestic RHI launch should increase general interest in renewable technologies and the big growth area is likely to be in off-gas areas where the arguments for renewables in general, and air source heat pumps in particular, are very strong compared with oil, LPG and direct electric heating.

In addition to increased sales in the social housing, self-builder and off-gas areas – in part generated by the RHI, we expect greater increase in commercial applications of heat pumps, particularly for the educational and agricultural sectors.

How is your company cutting its carbon footprint?
As a global organisation, we have been looking at aspects of our operation, from lean manufacturing to the highest international standards, right through to the careful disposal. Our recycling programme currently captures 99.1 percent of all materials from end of life products.

John Kellett is general manager of Mitsubishi Electric's Heating Systems Division

CURRENT AFFAIRS

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

The recent weather and resulting power cuts have brought home to many people that even if you have a renewable energy source for your house, you generally need an incoming power source to enable it to work. PV invertors need a synchronising supply, heat pumps need a supply and even your gas central heating and many gas fires need an electricity supply in order to function. The intermittent nature of many renewable supplies such as PV and wind means that a method of energy storage would be very useful. If you have a biomass system or a heat pump, you may have a thermal storage tank which can maintain hot water supplies for many hours without input, however they still require power for the pumps!

A battery storage system would be very useful which could be charged up when renewable energy is produced and then could be used when the external source is not available. I have not seen much evidence of these systems in the UK apart from with off grid PV systems where large batteries are charged from a solar PV array. I am sure this could be extended, admittedly at some cost, to a grid connected system. I understand that this is already available in Germany, why not here?

Work has recently started on the production of an international energy storage standard for use with Smart Grids. This should encourage micro storage systems in individual premises. A draft may be available later this year or early next year. Under the current FiTs arrangements export payments may be still payable with storage installed. A true win-win situation.

Trialling times

Developments continue apace at BRE and the National Solar Centre with a busy summer season to look forward to, as well as starting to see the first results from one of the UK's most comprehensive heat pump field trials conducted by DECC, reports **Steve Pester**

Over the last two years, BRE has been assisting the Department of Energy & Climate Change with the installation of monitoring equipment for domestic heat pumps installed under the RHPP (Renewable Heat Premium Payment) programme.

All the hard work is now bearing fruit as DECC has now released the first public report: 'Preliminary data from the RHPP heat pump metering programme'. Around 700 installations are being monitored with a precision hitherto unknown in UK heat pump trials. The reason for this monumental effort is that previous trials have shown rather poorer results than expected, when we know that heat pumps can perform well when specified and installed correctly. The results will feed into future policy and also into the MCS technical standards.

In theory, it is simple to monitor the energy inputs and outputs of a heating system in order to work out the system efficiency; but accurate, consistent, high resolution metering of all the energy flows in 700 heat pump systems can turn out to be rather more complicated in practice. So, this report provides significant new information for the renewables industry and for policy makers. The headline comment from this preliminary assessment of the data is that by comparison with the first EST heat pump field trial, the results are encouraging. The report can be downloaded from the DECC website: **www.gov.uk/decc.**

News from the National Solar Centre in Cornwall: You'll be relieved to hear that it has not been washed away with the railway line and is, in fact, quite safely sited on south-facing high ground at the Eden Project. We are currently preparing for a busy summer running the first season of outdoor testing of PV modules. These trials are long term tests using sophisticated monitoring technology to accurately determine the differences in efficiency between a number of types of module. If you are a manufacturer or distributor, or in fact an installer with good contacts to a manufacturer, and you would like to submit modules to the programme, please do get in touch – we will be closing the door to new modules in the next few weeks. Email: **nsc@bre.co.uk**

Staff and associates from the BRE National Solar Centre will be speaking in several sessions at Ecobuild on such topics as: The renewables market: incentives, payback, & regulatory drivers; the business case for PV at different scales; and Advances in PV technologies.

Fighting FiT…?

Kim Mann, Krannich Solar, discusses the latest solar PV FiT rates for 1 April onwards and how the degression mechanism has evolved from foe to friend

I will admit that the phrase 'FiT reduction' still sends an involuntary shiver down my spine, as it invokes memories of the first drastic tariff cut and the industry turmoil it caused. With a little hindsight, however, I genuinely believe that the degression mechanism has, over time, become a positive influence and has contributed to us becoming a truly resilient and evolutionary industry.

For a long time, the main thing the PV market craved was stability and, in reality, the gradual and transparent FiT reduction mechanism is helping to provide just that. The PV lens is now firmly focussed on commercial solar and the freezing of the FiT for systems over 50kW from 01 April will no doubt encourage the continuation of this fledgling growth. Despite a noticeable increase in the average size of system we supply to installers, the 50-250kW roof-mounted market is still massively unfulfilled and holds tremendous opportunity for growth as business owners continue to realise the value PV can add to their bottom line.

The domestic market may not be in the spotlight much anymore but is still holding its own and, with grid energy prices forever on the rise and in the media, the 3.5 percent reduction in FiT for smaller-scale systems from 01 April is unlikely to have much negative impact, especially when you factor-in the increased export tariff. Perhaps I shouldn't be surprised that our biggest customer continues to be one whose work is 100 percent domestic installation.

Overall, I believe that the gradual FiT reduction scheme, with market-related degression 'freezes' as and when required, is working and will continue to help the government progress towards its long-term goal of achieving grid parity through a stable and maturing renewables industry.

What about after grid parity, you may ask? Well, that's a question for another day..!

Riders of the storm

Adrian Horsley, technical manager for DEHN UK, discusses the importance of protecting refrofit PV systems from destructive lightning surges

Due to their exposed installation sites and large collection areas, PV installations are at a high risk of damage due to both direct and indirect lightning strikes.

Since the PV system is connected directly to a building's electrical system, the subsequent impact of these surges can cause serious damage to PV installations, expensive inverters and electrical systems. Damage is not only limited to potentially high repair costs but also loss of service and important revenue for solar powerplants.

Caution must be taken when retrofitting PV systems and plant equipment onto buildings that already have an existing external Lightning Protection System (LPS) in place.

On such buildings where an external LPS has already been installed to BSEN 62305, care must be taken to ensure that the retrofit installation of the PV system does not render the existing LPS non-compliant.

A PV system installed above the protective zone offered by the existing LPS may now be at risk of receiving a direct lightning strike. Not only could this make the existing LPS non-compliant, it could also provide a path for lightning currents to enter the building and endanger life. In order to avoid this, steps should be taken to ensure that the PV system is incorporated into the protective zone of the existing air termination system and protected against direct lightning strikes. Additionally, the correct surge and lightning equipotential bonding SPDs should be installed where required on incoming services.

Buildings with external lightning protection and sufficient separation distance

The PV system must be located within the protective zone of the isolated LPS and the separation distance must also be maintained between the PV and LPS. If both these factors are met, the PV system is now protected from direct strikes and the possibility of flashover. (See figure 1)

Surge protection on the inverter DC and AC electrical supplies can be provided by the DEHNguard RED/Line Type 2 range of SPDs. The main AC electrical incoming services into the building must now also be bonded with a Type 1 SPD such as the RED/Line DEHNshield or DEHNventil.

Buildings with external lightning protection and insufficient separation distance

If the separation distance cannot be maintained, for example in the case of a metal roof or when the PV panels are bonded to the LPS then lightning equipotential bonding must be carried out using Type 1 SPDs due to the risk of a flashover bringing lightning currents into the building. (See figure 2)

The DC and AC electrical incoming services into the building must now be bonded with Type 1 SPDs such as the RED/Line DEHNshield or DEHNventil for AC supplies and the DEHNlimit for DC supplies.

Co-ordination between PV designers, installers and lightning protection specialists is essential to ensure the continued integrity of the Lightning Protection System.

DEHN have extensive experience in the design and development of LPSs for PV systems with a wide range of dedicated products aimed specifically at protecting PV installations.

Figure 1

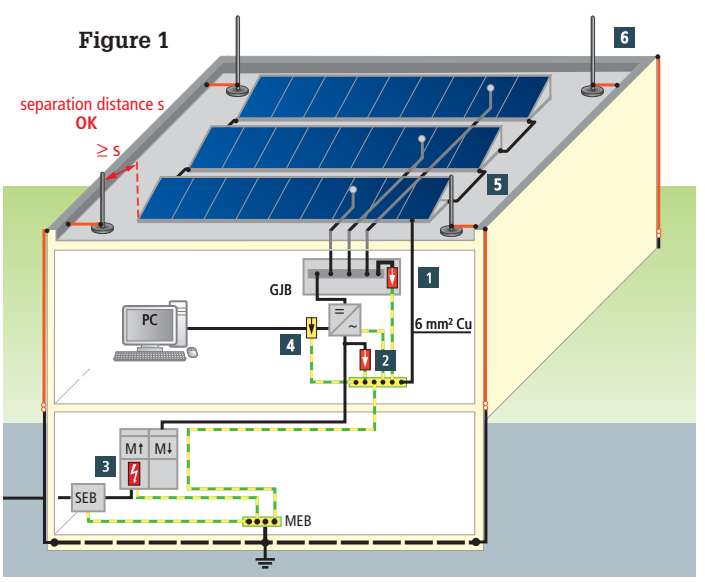
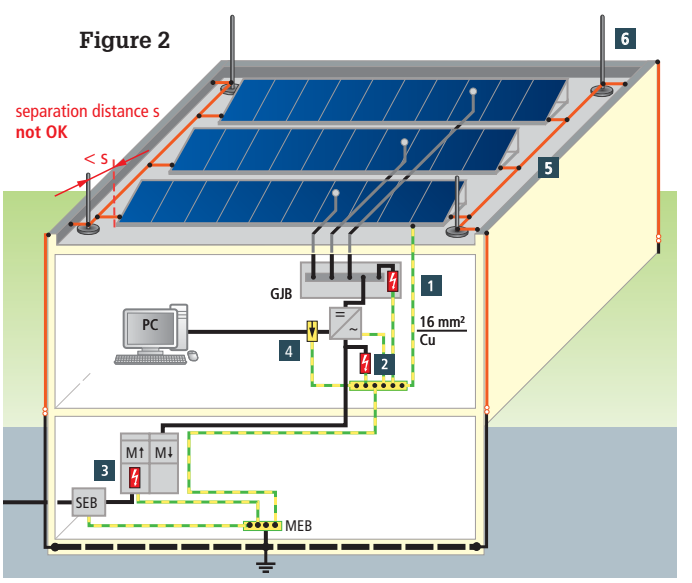


Figure 2



The solar derby: PV Vs thermal

Hannah Bell, technical advisor at PV distributor Krannich Solar, discusses whether a straightforward solar thermal system is best or whether a PV system with an immersion switch is a superior option for domestic hot water production

In the UK, an average of 15-25 percent of our fuel consumption is dedicated to heating water to above 25 degrees. With significant rises in fuel prices continuing, more consumers are considering a renewable energy solution to fulfil their hot water requirements.

Many opt for solar thermal as they want a dedicated water heating solution. The other option is to install a solar PV array and immersion switch, which enables them to use the electricity they generate to power an immersion heater. The added versatility of this is that the electricity generated can also be used to power appliances, etc.

Space availability

The first consideration is the amount of space available for the equipment, either on the roof or in an unshaded ground-based location.

In order to provide 50–70 percent of the hot water requirement for a 4-person domestic property, a solar thermal installation would need an area of just 3-4 m2. A PV system, however, would need a significantly larger area of 9.6-12.8 m2 to produce the equivalent energy. For smaller properties with limited space availability, where the sole objective is to provide hot water, a solar thermal system is probably the best option.

It is, however, worth considering the effectiveness of the system throughout the whole year, as during the winter months a solar thermal system can become all but dormant.

It's all about the money…

The second consideration is the cost of having each system installed and its affordability for the consumer.

As a guideline comparison, the solar thermal installation described above would cost in the region of £4,000 to £5,000, whereas a PV installation of the above size would be approximately £7,000 to £8,000.

Solar thermal is, clearly, a cheaper technology to have installed but whether that makes it the best value option for the consumer will be dependent on their individual hot water/energy consumption profile and whether they would achieve a better ROI through the flexibility of PV.

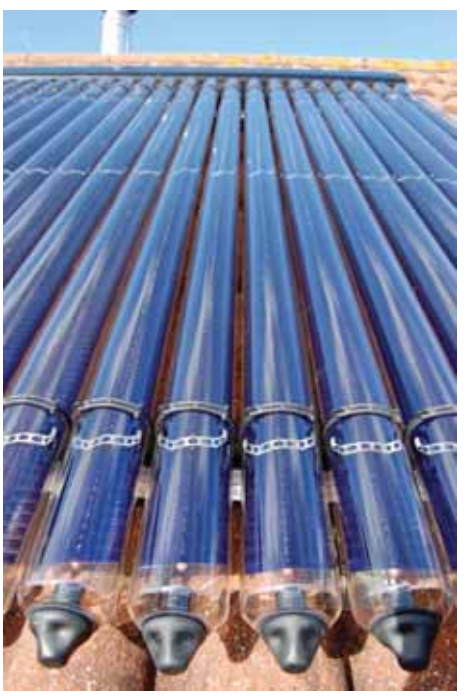
The other cost consideration for consumers is the expense of system maintenance and repair. A potential disadvantage of solar thermal is it has a higher maintenance requirement and fault potential due to it having more moving parts and a need for annual checks.

In comparison, a PV system needs little maintenance but is less efficient at water heating. The ultimate cost consideration is whether the value of the increased energy utilisation flexibility meets more of the consumers' needs and makes PV a better value system for them.

Mutual benefits

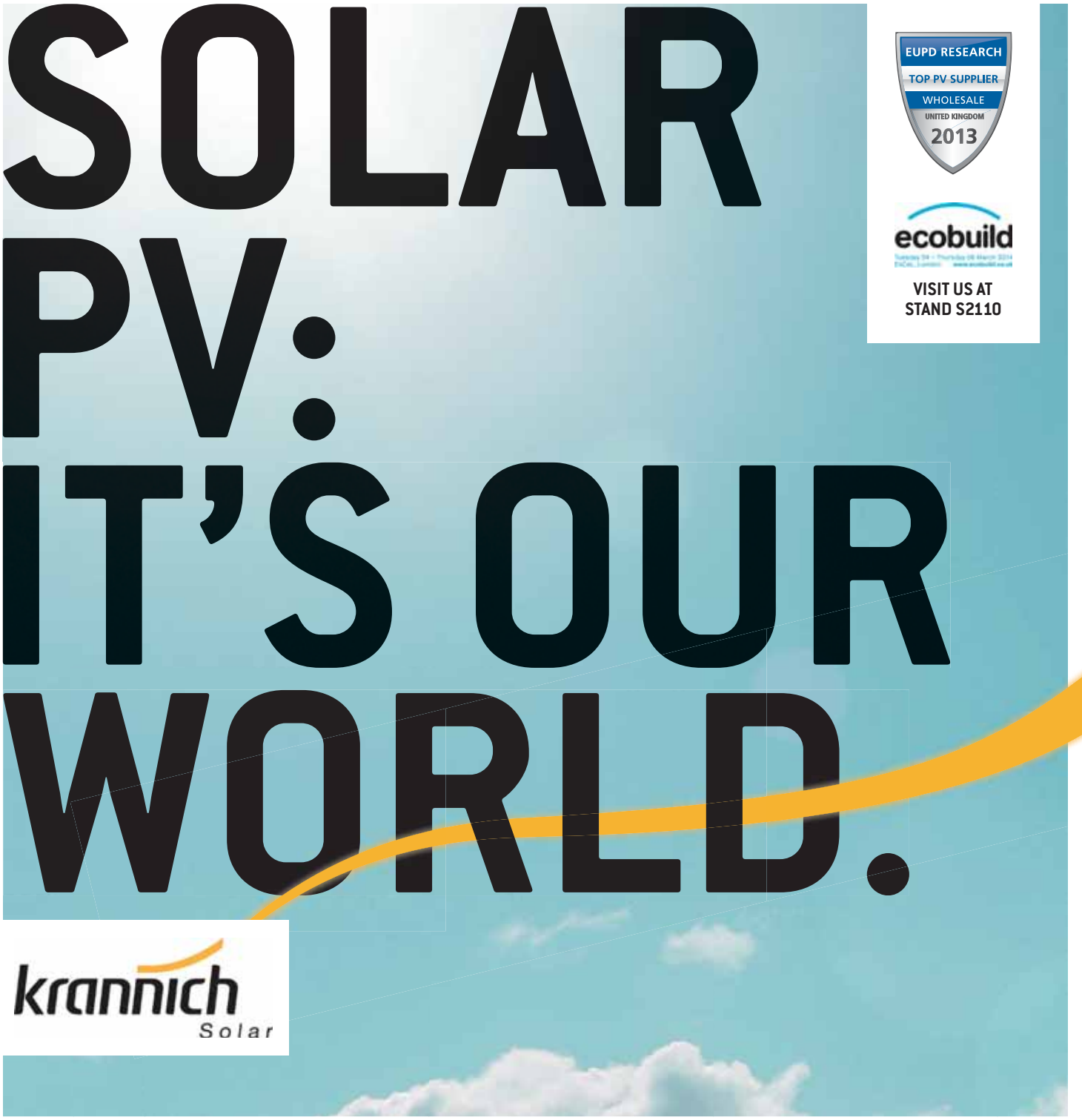
Both technologies have their advantages and disadvantages but are united in their eligibility for incentive schemes – the Feed-in Tariff and Renewable Heat Incentive. These incentives, coupled with the consumers' energy bill savings, help to make a compelling argument for installing whichever solar technology best meets their needs.

A potential disadvantage of solar thermal is it has a higher maintenance requirement and fault potential



Pros and cons: Solar thermal undercuts PV on both upfront cost and space but has limited hot water production in winter

In summary, there are strong arguments to support the use of both solar technologies. When advising a consumer on their options, the most important fact to establish is exactly how they want to utilise the energy they generate. If the requirement is solely for water heating purposes then a solar thermal installation may be the best and most affordable option. If, however, the customer would benefit from renewable energy that can be utilised in different capacities and throughout the whole year, then a solar PV array may work out the best value option.



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Famous Five

Ian Rose, professional services director at PassivSystems, gives his top five tips for maximising residential PV returns

The UK solar industry is currently one of the most active markets in Europe, with over 1GW installed in the last 2 years. The near-term future looks promising, with the UK set to become the largest solar market in Europe for the first time during the first quarter of 2014.

But with falling Feed-in Tariff (FiT) rates, today's PV investors demand maximised yields from their solar investments and are seeking new ways to guarantee their returns and increase on-going ROI.

Numerous academic studies have investigated the real performance of panels in the field. Typically these have tended to focus on the ability of the technology to deliver against forecast performance. PassivSystems decided to compare actual performance with the theory reported by these studies.

PassivSystems has now built up a portfolio of 16,000 monitored systems covering 42 portfolios of homes. These data sets go back to 2010, providing 30-minute interval generation data for the majority of homes.

We have seen that 50 percent of portfolios are failing to deliver the MCS forecast yield

We used this rich data asset along with geographically aligned historical weather station irradiance data to analyse the performance of our portfolios against a range of different criteria.

The results show that performance between portfolios varies by as much as 35 percent. On a system designed to generate £800 a year that is an efficiency range of £280 per annum.

We have seen that 50 percent of portfolios are failing to deliver the MCS forecast yield, leading to erosion of the anticipated return from the Feed-in-Tariff.

If this underperformance is measured and well understood, it is possible to take steps to counter it.

In addition to the six primary causes of system losses (shading, inverter outages, inverter dropouts, inverter threshold, module rating and Maximum Powerpoint Tracking), our research identified a number of additional reasons for system losses. These include residual current devices (RCD) tripping – which in many cases can go unnoticed for many days or weeks, the tenant inadvertently disconnecting the system by use of an isolator switch, pay-as-you-go meters cutting out generation and poor or incorrect wiring during installation.

This highlights that human interaction with the system can result in significant impacts on the levels of generation achieved.

What this analysis tells us is that whilst solar PV is energy efficient, in order for it to become financially efficient, the system must be properly monitored and managed. The most important thing to recognise is that a poorly managed PV system could lead to consumers losing hundreds if not thousands of pounds over the life of the asset.

The implications for owners and funders of residential PV systems are clear – these are not fit and forget assets. In order to fully optimise the lucrative nature of solar PV portfolios, domestic installations need to be well managed and maintained.

Hard truth: Primary research conducted by PassivSystems shows a 35 percent margin of error between the estimated and actual performance of some UK solar installations, says the company's professional services director Ian Rose

Here are my top five recommendations for maximising and maintaining residential solar PV yields:

1. Ensure that monitoring is considered as a strategic requirement when planning a solar PV investment:

2. Contractually separate monitoring from ongoing operations and maintenance servicing to ensure that an independent measure of performance is captured.

3. Build appropriate service level agreements into operations and maintenance contracts based on the ability of the monitoring service to provide insightful performance data and information on the speed of fault resolution.

4. Ensure that the monitoring service is able to provide an assessment of panel performance broken down by different contractors, hardware components, housing types and locations to provide the fullest insight into factors influencing the level of return.

5. Work closely with your monitoring service provider to ensure that the service you procure can deliver the information required to support a proactive maintenance regime.

Industrial action

After a false start the RHI Energy Emission Certificate scheme is finally up and running. **Paul Clark**, managing director of Rural Energy, asks if this latest initiative will help increase confidence in the biomass sector

Our Herz boilers are among the first in the UK to pass the emission tests set by Ofgem from our full range. And that is certainly helping our sales teams, giving out the strong message about quality and technical expertise, as well as driving home the vitally important fact that the certificate means they qualify for the RHI – giving clients the confidence they need to invest.

The introduction of standardised requirements also sends out a clear message that the sector is being properly overseen and that high standards are important not only to the government, but also to those who believe in the future of biomass as a primary renewable energy technology in the UK.

The purpose of the emission requirement is to ensure responsible biomass boiler use and that local emissions do not exceed a level set by the government. That move has to be applauded.

However, it will take more than this to help grow the biomass market in Britain. We need continuing strong messages from government that it is committed to the RHI scheme over the long-term.

Stability is the key to growing the sector and, as we have seen in other renewable sectors, uncertainty over government policy and the chopping and changing of initiatives and incentives can have a disastrous effect on a fledgling industry.

Businesses and organisations looking to invest in biomass not only need to have the reassurance of the Emission Certificate, they need to know that the RHI will be there for them in the long-term and that whatever the make-up of the government, its commitment to this form of renewable energy remains solid.

As for other legislation, we have been calling for the creation of a national accreditation scheme to ensure that both the products (> 45kW) and the installation of them meet specific and high standards.

That scheme needs to be government-approved and should include the registration of competent installers and servicing businesses, similar to the Gas Safe registration system for the gas sector.

For domestic biomass installations below 45kW, the MCS Scheme effectively regulates the industry, but the lack of any regulation for commercial-scale projects is a major and growing issue moving forward.

It is all about having checks and balances in place and in our opinion, the more we have the better we will operate as an industry.

We need to have a nationwide scheme that shows that a boiler has been installed properly and that it is also being correctly operated.

Whilst no-one wants to see over-regulation and the sector strangled by a mountain of red tape, we have to get the balance right and demonstrate that the professionalism and expertise that exists in biomass in the UK is leading the way globally.

We want to see a healthy, thriving and growing biomass sector. The Emission Certificate is certainly a step in the right direction. However, there is still more to be done.

Installers need to be around post-installation to ensure the operators are fully trained and up to speed and that takes time and commitment. That's the kind of standard of service and expertise we insist on and that a nationally-recognised accreditation scheme would ensure.

It is all about raising the perception people have about biomass and the commercial benefits it can bring as a robust, reliable and safe renewable energy technology.

Above and beyond: Paul Clarke, Rural Energy, is calling for an MCS-equivalent accreditation scheme for biomass installations larger than 45kW

No-one wants to see the sector strangled by a mountain of red tape, we have to get the balance right

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Unlocking green talent

Sam Lotriet, lead director of utilities at talent and career management specialist, Right Management, explores the blend of skills needed to accelerate green growth

Skills shortage: 50 percent of the UK's energy and utilities workforce will have left the industry by 2023 creating a significant manpower gap to be filled, says Right Management's Sam Lotriet

There is now an urgent need for the government and the utilities sector to start strategically planning the green workforce

By 2023, it's estimated that as much as 50 percent of the UK's energy and utilities workforce will have left the sector. At the same time, the sector is poised for considerable growth as interest in renewable and microgeneration technologies continues to soar. This is good news for the economy and the environment but there's a real risk that the UK won't be able to capitalise on this opportunity due to the current skills void.

Years of uncertainty and ever-shifting regulatory goalposts have led to a lack of investment in the sector and this is being acutely felt in the workforce. There is now an urgent need for the government and the utilities sector to start strategically planning the green workforce, and this must start with attracting new talent into the industry.

Investment and attraction

In September 2013, the Energy and Efficiency Partnership, an employer-led partnership between government and 67 employers, was announced. It's expected the initiative, which will see private sector money match public sector funds, will create around 70,000 learning opportunities. This will prove crucial in giving employers the confidence they need to create apprenticeship and traineeship opportunities and get new talent into the sector.

More also needs to be done to prepare young people for these opportunities, starting in schools. We need to put more energy into making STEM subjects attractive qualifications for young people and give clear advice on how jobs in installation, engineering and clean-tech can form the basis of rewarding career.

Making the most of existing skills

While the future of the industry will depend on attracting new recruits, there is much that can be done to capitalise on existing talent. In many cases, green jobs are simply 'traditional' engineering roles with a new twist on them so keeping people who are already in the organisation must be a priority. This can be achieved through strategic workforce planning where organisations identify the roles they need in the future, their existing skillset and what's needed to bridge the gap between the two. This can be done through a combination of mentoring and coaching programmes which will give existing staff the opportunity to develop their skills while carving a clear career path that will help retain key talent within the business.

It's also important to consider the potential of older workers – either through schemes whereby they can help to mentor new recruits, or by making adjustments in the business. Small steps, like introducing flexible working hours and locations or refurbishing facilities to improve accessibility, can go a long way towards keeping key experience in the business.

Recognising the value of transferable skills

Given that many clean tech jobs already have roots in existing disciplines there's a real opportunity to take advantage of existing skill sets outside the immediate industry. For example, through Right Management's Career Transition Partnership team, we know that Service leavers from a military background have a wealth of experience that would work well in the clean tech industry. The Armed Forces make a significant investment in their team, with a particular focus on technical, management and leadership skills. This makes them ideal candidates for roles in clean tech, even without specific industry experience.

The green opportunity is huge but its potential will only be realised if we have the right skills in place to encourage growth. This can only be achieved if installation businesses consider a blend of old and new skills and start to strategically plan their future workforce now.

Centre of excellence

The consolidation of the PV industry means that professional training continues to be highly sought after by clients and renewable energy companies alike, with both established professionals and new entrants looking to take advantage of the potential that PV offers, reports the European Energy Centre

Professional bodies such as the European Energy Centre (EEC), who run training courses and conferences organised with the United Nations Environment Programme (UNEP), have been supporting professionals within the renewable energy and energy efficiency sectors for nearly 40 years. In 2013, the free-to-join EnergyCPD Professional Membership Programme was launched to respond to the call for greater recognition of professionals and students in the solar and renewable energy sectors. This free Programme enables its members to progress their careers and gain recognition in the industry, by qualifying progressively as AEEC, MEEC and ultimately achieving Mastership Status in EnergyCPD.

How the EnergyCPD Programme works

The Programme has seen membership requests increase rapidly due to the renewed focus by governments on the renewable energy and energy efficiency agenda, because career development is now necessary to keep pace with this fast-growing industry. The EnergyCPD Professional Membership Programme supports its members by providing a structured programme of CPD Activities for Progression and developing a network of like-minded individuals to face the growing pace of change and increasing need for dialogue between professionals in the global renewable energy sector. To become a member, visit **www.energyCPD.co.uk**

Galileo Master Certificate (GMC) – leading recognition

The GMC provides additional recognition for professionals within the industry – awarded in Europe since 1975 and also provided by the EEC. The short training courses are taught by leading experts and designed for busy professionals aiming to refresh their knowledge. The PV course has been compiled to suit all participants, from installers to consultants, electricians and students.

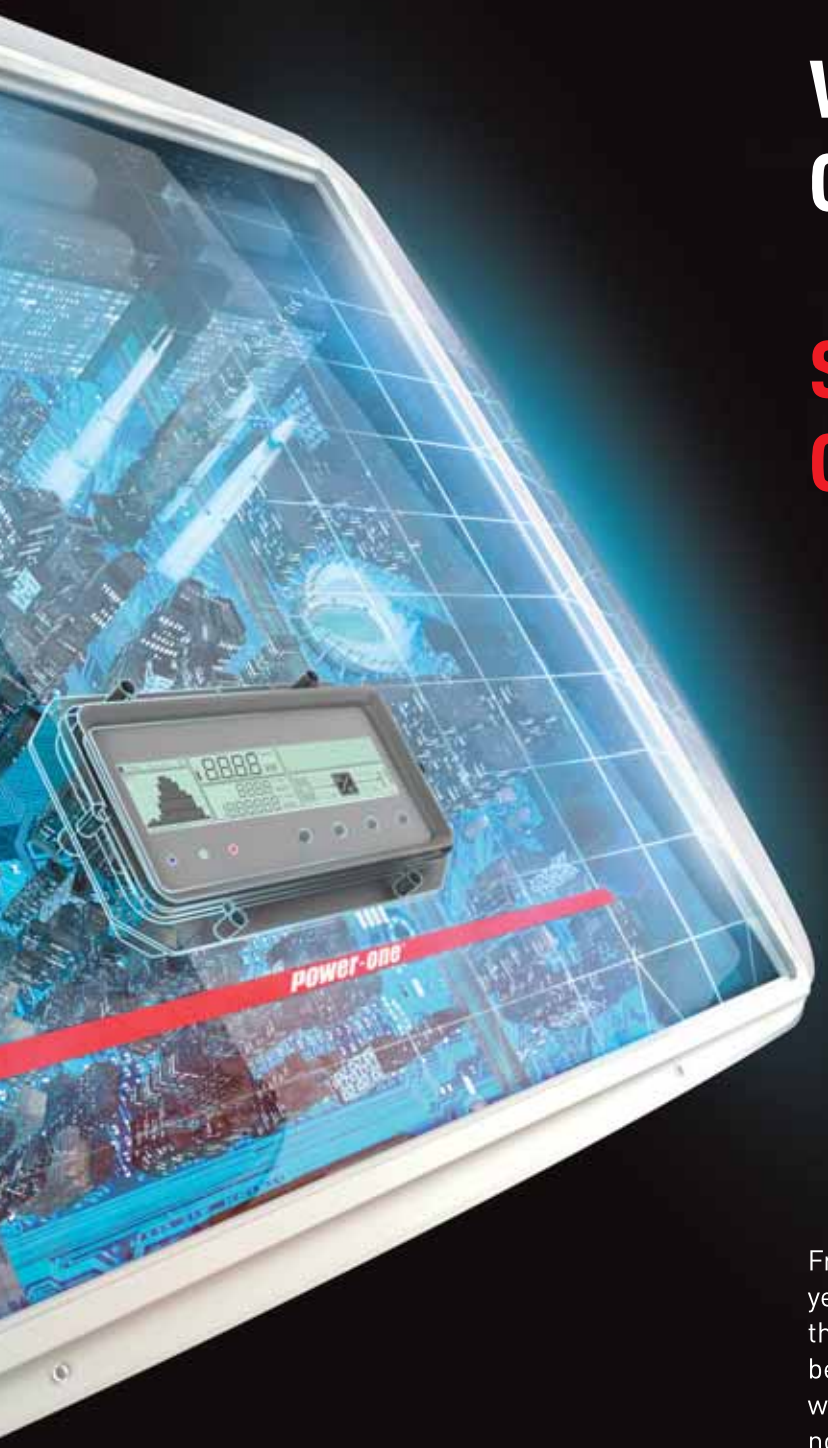
Expert lecturers have designed the EEC courses in line with the European Project EMTEU – Energy Management Technician in Europe – to suit new entrants to the industry and existing installers. Targeting both groups in the same classroom environment has also provided the opportunity for networking among participants and the experts. University Professor John Wilson, a lecturer of EEC courses, said: "It is no surprise that PV training is popular because photovoltaic systems are attractive to people with widely varying backgrounds due to their fit and forget image. Participants on EEC courses range from engineers to others with no prior technical experience, and from the course they all gain a better understanding of PV technology and of codes for safe practice."

With 40 years of experience, we know how to tailor courses to benefit busy professionals. Short two day courses are held at major universities across the UK, along with online Distance Learning courses at the EEC Academy for participants from the UK and beyond, who cannot travel to course locations.

Learning Pathways create highly trained experts

The PV training provided by the EEC is supported by learning pathways which are creating highly trained experts able to progress their careers in the green energy sector. The Renewable Energy Expert Certificate is made up of three courses and provides industry professionals with a broad knowledge of renewable energy technologies, to expand their installation advice beyond the limitations of one technology. The learning pathways aim to build on the EEC's commitment to promote best practice in renewable energy educational activities with its partners, who include the United Nations (UNEP), the international IRENA Renewable Energy Learning Partnership (IRELP) and leading universities in Europe.

Professional development: Professor John Wilson teaching the solar PV training course held at Edinburgh Napier University



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Bright spark

Voltage optimisation (VO) has already proven itself as a standalone technology, but can also work effectively alongside solar PV and wind power, says **Geoff Clifton**, business development manager of VO4

Bigger picture: VO can reduce energy consumption by 12 percent alone, but will deliver greater benefits when combined with PV, says VO4's Geoff Clifton

Commercial enterprises have been reaping the benefits of voltage optimisation for a number of years through reduced energy and maintenance bills, whilst at the same time slashing their carbon emissions. As the ingenious technology corrects the imbalance between the voltage supplied, in the UK at approximately 242V, and the 220V required by modern electrical equipment, businesses can enjoy the savings without any impact on operations. In fact, appliances work better and last longer with a slightly lower voltage input and reduced transients.

A 3-phase unit is now available from VO4, for businesses with 3-phase installations up to 100A per phase and an annual energy use up to 300,000kWh.

Businesses can enjoy the savings without any impact on operations

These units will give small and medium businesses, from hotels to offices and restaurants to healthcare facilities, immediate and significant energy savings. They also work well with solar PV and other energy saving and generation systems, making them an attractive option for the government's programme of subsidies. This is in addition to a payback often within 2-3 years.

VO shouldn't be viewed as an alternative to other green technologies, as it can be easily combined with them to deliver even greater benefits. Moreover, the installation of a VO system alongside solar PV can counteract one of the main disadvantages inherent with a solar PV installation; namely the need for the solar PV inverter to step up the voltage to above the existing mains voltage to enable the electricity generated to be fed into the grid. This higher voltage places electrical appliances at greater risk of failure and can negate the revenues generated from the Feed-in Tariffs. With an installation combining both systems, businesses and other non-domestic organisations can maximise the benefits of VO, solar PV and the government's environmental programme.

Installation of a VO unit can reduce energy consumption by an average of 12 per cent. This equates to 0.5kg of CO2 saved for every kWh used, which means a business using 10,000kWh per annum could save over 1,000kWh per annum, a reduction of some 500kg in carbon emissions. These direct financial savings and reductions in carbon emissions are on top of the benefits to electrical appliances that will not be subjected to the stresses of a fluctuating and higher than required voltage supply.

A business using 10,000kWh per annum could save over 1,000kWh per annum

Quick and simple to install, the two wires in and two wires out units, can operate on all circuits, 24 hours a day, seven days a week. There is no need to change energy supplier and units should take no longer than an hour to fit. Once fully operational the VO unit, in tandem with a solar PV system, taking advantage of the government's financial incentive schemes, will save money on energy and maintenance whilst reducing carbon emissions from day one.

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Law & order: From March 31 2014 the new MCS 012 standard will become mandatory for pitched roof PV and thermal kits to prevent poor installations

Securely fastened

Stuart Cooper, managing director of SOLFEX Energy Systems, reports on the key points of the impending new standard for pitched roof installation kits – MCS 012

Since the Feed-in Tariff was introduced in April 2010 and many years prior to this, hundreds of thousands of PV and solar thermal systems have been installed. Although all current modules and solar thermal collectors have their relevant MCS or Solar Keymark certification, what about the substructure holding them? From March 31 2014 all this will change with the introduction of the new MCS 012 standard which will give the industry a clear set of boundaries to operate within.

Firstly, the new standard & performance criteria will cover the following topics:

- Resistance to wind uplift
- Weather tightness
- Fire
- Installation instructions

The requirements of this new standard are not applicable to installations on flat roofs which will be covered by a separate document.

Conclusive and successful testing will ensure that installers are being supplied with a quality mounting structure which is fit for purpose and designed for the life of the product. Over the years I have seen numerous examples of poorly installed solar thermal installations which use various metal strapping systems or bolts which are clearly not fit for purpose. These either cause damage to the roofing fabric which leads to water ingress, or the fixing method isn't secure. MCS 012 should hopefully halt these bad examples.

Two other performance criteria which are examined are weather tightness and resistance to fire for roof integrated thermal or PV products. The mounting of solar panels on or in the roof shall not decrease the weather performance of the declared roof types. A fire rating shall also be declared in accordance with MCS 012 for roof integrated products which satisfies BS 476-3 2004 or DD ENV 1187:2002 Test 4 and the rating must be declared.

The new standard also gives clear guidelines to installations using hanger bolts which have been a popular choice for installers over the years. MCS 012 states that new hanger bolt installations should meet the following requirements:

- The bolt or flashing shall not transfer any load on the slates / tiles (excluding metal tiles or sheets) beneath
- The system shall not rely on site applied silicone, mastic or other similar type sealants as the sole method to provide a weather-tight seal
- The system must durably seal every layer of roof covering that is perforated by the bolt system
- The system shall not rely on a sealing washer or plate that presses down on the slate/tile (excluding metal tiles or sheets) to ensure a weather tight seal
- The bolt fixings shall not be fixed into the battens

Mounting installation instructions must list compatible solar panels and roof systems. This information must detail to the installer clearly how the system is installed including the type and number of fixings along with the maximum recommended spacing distance of these fixings. Installation instructions must also indicate which roof type coverings are compatible with the fixing system.

Other information which the installation manual will detail is the maximum wind load the system achieved when assessed according to the MCS 012 standard. Using the standard procedure and fixing details as described in the manufacturer's instructions.

Products complying with the standard will be clearly labelled with the Approved Product MCS label along with a certified registration number. All SOLFEX Energy Systems' solar thermal & photovoltaic pitched roof mountings kits will be fully certified when MCS 012 becomes mandatory on the March 31 2014.

Rexel's report card

Rexel UK's strategic development director **Brian Smithers** updates REI on the support the company offers to installers plus the dedicated work of its charitable arm

REI: What services do Rexel provide to the renewables sector?

BS: In the UK we have a strong presence in the renewables market, offering services across a range of products including solar PV, solar thermal, biomass, air source and ground source heat pumps, energy management and monitoring, and electric vehicle charging. Rexel partners with various suppliers to deliver domestic and commercial solar PV products from all-in-one installation kits to match job specifications to individual modules, mounting systems and inverters.

How is business faring in the present economic climate?

In today's tough economic climate with the cost of living on the rise and ever-increasing fuel prices, consumers are looking more and more towards alternative energy solutions. As a result of this, we have seen soaring adoption rates, amongst both the domestic and commercial sectors, of renewable energy products.

We have also seen a noticeable increase in interest around renewable heat technologies such as air source heat pumps as a result of the Renewable Heat Incentive (RHI), and expect to see more interest from our residential sector customers with the introduction of the domestic iteration in spring this year.

With market conditions improving in the UK we expect to see sales growth over the medium term and renewables remain a key component of the UK portfolio.

Tell us about an interesting project you've worked on?

Nayland Primary School was seeking a way by which a renewable energy generation system could be installed within the Nayland area, mainly for the benefit of the community. In conjunction with the Rexel Energy Solutions team, an exciting opportunity to install a PV system on the roof of Nayland Primary School

Pole position: Rexel UK offers impartial advice and training to installers, says strategic development director, Brian Smithers

was pinpointed.

Rexel was at the heart of the solar PV installation project, acting as the co-ordinator and the glue holding the whole project together. This included finding a local accredited installer, who had received specific solar PV training from Rexel to ensure compliance with the Microgeneration Certification Scheme, working alongside the test and commissioning engineer, Distribution Network Operator (DNO) and key community representatives.

As well as the clear financial benefits, the school has completely transformed staff and pupil attitudes to energy and dramatically reduced carbon emissions. The school won a Green Flag from Eco-School (an international awards programme for sustainability in schools).

What is unique about the company?

Rexel strives to pursue a profitable business model while strengthening the fight against climate change, encouraging the personal fulfilment of its employees, and taking concrete steps to help the community. We are also committed across the whole business to leading the way in changing attitudes to energy efficiency globally. The Rexel Foundation for a better energy future (a charitable organisation launched by the Rexel Group) promotes initiatives of public interest, which focus on making energy more accessible to everyone. The Rexel Foundation's mission is based on three pillars; to improve understanding and awareness of energy efficiency, to encourage innovation by providing research grants and funding educational projects and to support charitable community-based projects in the fight against fuel poverty.

How does Rexel work with installers?

We believe that it is no longer enough to merely sell product to our customer base as a distributor. With the rapid evolution of energy saving products, our role has transformed into a provider of education around the emergence of new technologies as well as solutions for our customers. Our support for installers hinges on our ability to be totally impartial and independent in our advice and training, and also gives access to a rich resource of expertise from specialists in every sphere of energy efficiency. We offer a wide range of training courses in various technologies, allowing our contractor customers to widen their service offering and 'future-proof' their business.

Keeping FiT in 2014

Despite a degression in the Feed-in Tariff for non-PV technologies kicking in from April 01, wind energy is still a growth area for installers in 2014 and beyond, argues Diana Popa, Vergnet's Europe sales manager

The Feed-in-Tariff (FiT) was introduced in 2010 to support distributed electricity generation in rural areas, where it is needed most by communities and local businesses. Projects with a capacity of less than 5MW are eligible for the FiT, which was also designed to help meet the government's 2020 target of having 15 percent of energy generated through renewable energy sources.

The latest figures from RenewableUK saw the market almost doubling in size in 2012 and, in our own experience, 2013 was also a strong year and we expect this growth to continue even after 2014. Despite the confirmed reduction in FiT this year, we do not think this will deter continued investment in medium wind. The scheme still provides a very strong IRR (Internal Rate of Return) as well as support for major energy consumers in the context of increasing energy prices and reducing reliance on fossil fuels.

At Vergnet, we have been supplying medium wind turbines in the UK since 2010 to farmers, agricultural businesses and medium wind developers and investors. We have been working with our partners to undertake site feasibility, planning, finance, installation, commissioning, registration, warranties and after-sales services for farmers and landowners keen to develop medium wind turbines.

Despite the confirmed reduction in FiT this year, we do not think this will deter continued investment in medium wind

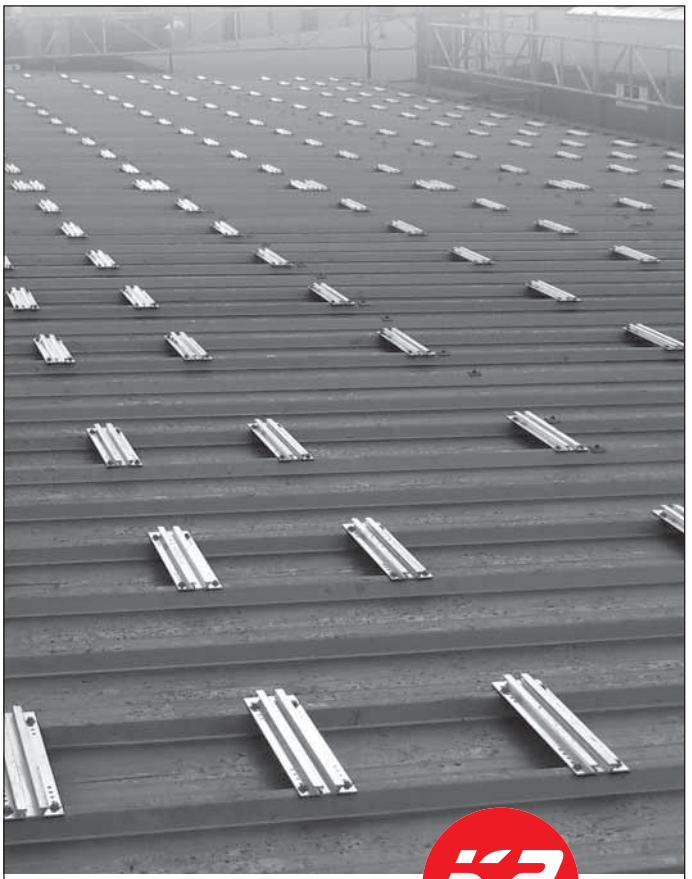
Even with a 20 percent decrease we estimate medium wind projects can save large energy consumers up to 12p/kWh, on top of approximately 15p/kWh paid out as generation tariff. For the energy exported to the grid, Power Purchase Agreements today secure around 5.5p/kWh. Consequently, we believe that medium scale wind energy is still a very attractive prospect for renewable energy.

Wind is a prolific resource and we work with customers across the UK who continue to benefit from the FiT incentive. For example, our customers include a cheese farm in Lincolnshire, a pig farm in Scotland and an arable and equestrian farm in Suffolk, who have all experienced a significant drop in their energy costs and secured additional revenues for their activities.

The choice of wind turbine is also important. Choosing one with an excellent power curve will deliver a strong performance yield and this will ultimately offer the most attractive return on investment, regardless of FiT changes. It's also critical to ensure you chose a wind turbine that is based on reliable technology that is backed by a full package of warranties and services. This will ensure not only the bankability of your project but also its long term profitability. In our experience, customers should also look at a company's proven track record and history as this is also essential to provide the necessary confidence required by UK financial institutions.

Taking into account the high IRRs and the additional energy savings and benefits that the FiT provides to local businesses and communities, we do not expect the reduction in the incentive to dampen the enthusiasm of customers and growth in the sector. We are looking forward to seeing more of the same successful medium wind projects go live this year and to watching them thrive for many years to come.

Chosen one: Opting for a turbine model with a strong performance yield will have more impact on returns on investment than reductions to the Feed-in Tariff, according to Vergnet



Mounting systems for solar technology

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Pushing the boundaries

With a decision still pending regarding the eligibility of thermodynamic products under the MCS, REI caught up with Essex-based manufacturer **The Magic Thermodynamic Box Company** to see what progress is being made under the review process

Following the suspension of registrations for thermodynamic systems on the MCS database in November 2012, a review is currently underway to develop requirements for the installation of this product type. Until a decision is made, there is no restriction of this type of system being installed although it will not qualify for any financial incentive.

As a combination of solar thermal and heat pump technology, thermodynamic panels promise remarkable results including the production of hot water 24/7. The Magic Thermodynamic Box currently produces two core products in this area – The Little Magic Box (retrofit thermodynamic panel) and The Magic Heating Box (central heating management system). Malcolm Stratford, the company's technical advisor, sheds more light on how the products work.

"In layman's terms, the system works like a fridge in reverse. A refrigerant fluid is heated by external energy from the atmosphere. This increase in energy changes the fluid into gas, which passes through the compressor. Hot gas then flows through a heat exchanger, which transfers the heat to produce hot water.

"The Little Magic Box compresses the gas which increases the temperature. The spent gas reverts back to a liquid which flows back in the panel, allowing the process to repeat. Simultaneously, a water pump pulls cold water from the cylinder into the Little Magic Thermodynamic Box. This heat exchanger returns hot water to the cylinder which flows continuously until the water in the cylinder reaches 55°C. Once this is achieved the system goes into standby mode."

As the only UK manufacturer of thermodynamic products, representatives of the company sit on the MCS working group developing standards and scheme requirements. The group has been engaged with a number of other manufacturers and installers as well as certification bodies and test houses during this process.

Sizing up: The Magic Thermodynamic Box Company has moved to new larger premises in Chelmsford, Essex as interest in thermodynamics grows

Exciting times: MCS plans to complete its review into thermodynamics during 2014 says Alex Basile, marketing director

According to The Magic Thermodynamic Box Company's marketing director Alex Basile, the aim is to publish requirements during this calendar year, thus allowing thermodynamics to qualify for MCS certification and financial incentives.

The Timetable will be monitored closely to ensure work is progressed as quickly as possible and in line with the MCS process as published on the MCS website.

'"We are creating the market place for thermodynamics in the UK which is why we have been asked to give advice on the rules that ensure the products meet the requirements to qualify for the MCS approval," he said.

"The product is a major improvement when compared to solar thermal as it works twenty four hours a day every day of the year. The MCS see the potential volume of sales which is why consumer standards need to set."

The company is gearing up for the increased interest which can be expected once MCS approval is granted for thermodynamics. It has recently moved into a three story 7000 sq ft listed building in Chelmsford and has brought production of The Little Magic Box from the Far East and Spain to Essex.

Marketing director, Alex Basile, added: "Our product is unique, helps the environment and saves money. When you have a good product that fills a huge gap in the market, it generates a considerable amount of interest. We will be at Ecobuild (N2412) and have an exciting future ahead of us."

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Compensation claim

Alan Dunn, Husky Heat Pumps' business development manager, asks: Is weather compensation all it's made out to be?

It is widely accepted that weather compensation on heating systems including heat pumps increases the efficiency. However is it really as good as people say? The answer is 'sometimes' - because there are many elements to weather compensation.

Questions we must ask include:

- Do you have the available, selected parameters on your heating system and can you select the correct weather curve?
- On many systems there is the choice of one, two or three separate weather curves, but are they actually the correct curve for the property?
- Do we know if the engineer is capable of calculating the correct curve, if it's available?
- Is he qualified in calculating how good the customer's radiators or underfloor heating are?

If he is not qualified then it is highly likely the wrong curve will be selected. We can be more critical of systems that only have two or three curves, but are they actually the most efficient curves available? The answer is probably not. So in order for weather compensation to work correctly, we need a programmable curve, that's programmed by the engineer. Therefore the engineer must be capable of actually calculating the curve. In Husky's experience most cannot.

The most efficient way to run a heat pump is to run it with the lowest temperatures possible. Even if it is producing one degree more than is needed to heat the property, it's less efficient than it should be. So does weather compensation allow for this? – No! The answer is an intelligent system which can calculate itself to get the property to a desired temperature. At Husky we have developed the Home Optimisation intelligent control which will vary the water temperature in order to control the room temperature to the desired level. Therefore the system will be working at maximum efficiency in any weather condition.

Heat Pumps and the RHI

Consumer demand for heat pumps is about to boom, says **James Timbs-Harrison**, product marketing manager at Mitsubishi Electric

With the domestic RHI starting this spring, interest in low-carbon heating is expected to grow.

The recent announcement by DECC that the non-domestic RHI now includes air to water heat pumps should also lead to a growth in the use of renewable heating in the commercial sector.

RHI has been planned so that it produces long term and sustainable growth in the use of renewable technologies. It will see commercial building owners, landlords and individual homeowners receive a quarterly payment – which can amount to hundreds and even thousands of pounds, for up to seven years for domestic installations and up to 20 years for non-domestic buildings.

It also makes the case for heat pumps much stronger, especially against carbon-intensive and expensive technologies such as oil, LPG and direct electric.

Heating accounts for a significant part of any budget and everyone is also under pressure from a raft of challenging legislation focusing on energy efficiency and carbon reduction.

Heat pumps can offer a serious alternative – and deliver reductions in both running costs and emissions over gas, oil and other forms of carbon-intensive heating.

Recent advances in the technology mean that they are now straightforward to install and can simplify operation and maintenance regimes. They can also work in tandem with existing traditional heating in a hybrid solution that can offer the best of both worlds.

A heat pump works by harvesting free, renewable energy from the outside air, or the ground and upgrading it to deliver heating and hot water to a building.

For every 1kW of electricity used to power an Ecodan air source heat pump for example, up to 3.2kW of heat can be delivered to the building; 69 percent of which is renewable energy.

Our own Ecodan range is available from 4kW up to 688kW so we anticipate a lot of opportunity for installers who are already ahead of the curve.

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ENERGY THAT CHANGES

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Big is beautiful

TGE Group has installed the UK's largest commercial solar thermal installation for a Shropshire game rearing business

The 194kW solar thermal hot water installation will help Shropshire game farmers, Steve and Sam Barker, overcome concerns about the effects of heavy energy use and subsequent rising costs on their successful pheasant rearing business.

"We needed a system that would be simple, reliable, efficient and cost effective," said Sam Barker, JE Barker & Sons.

"We are delighted with the results and astounded by how much heat can be produced."

TGE Group designed and installed the 126 panel solar thermal system to provide under floor heating, divided equally across the two game rearing sheds, with a smaller 7.6kWp solar PV system to support it. The combined, multi-technology systems will reduce carbon emissions from the site by around 34 tonnes per year and the solar thermal project, which is eligible for the RHI and 100 percent first year Enhanced Capital Allowance, will earn over £450,000 in savings and income over the 20 years of RHI payments.

"Using solar thermal to heat open spaces shows the versatility of this technology. Traditionally farmers might fit solar thermal for generating hot water for wash downs, when in reality there are a wide range of commercial heating applications that the technology can be used for," added Matthew Evans, heat director, TGE Group.

Big deal: Steve and Sam Barker have cut carbon emissions at their Shropshire game rearing company by 34 tonnes per annum with a 194kW solar thermal system

Ice cream maker scoops bill savings

Belfast-based ice cream manufacturer **Riada** is set to save 70 percent on its annual energy bills after completing a renewable heating project with heating engineers BS Holdings and local wood pellet fuel supplier brites

Dream team: Paula Keelagher (brites) with Brian Hood (BS Holdings) and Norman Adair (Riada)

Brian Hood, managing director of BS Holdings, said: "With the cost of traditional energy a contributing factor to rising operating costs, businesses are increasingly turning to energy efficiency as a way to not just be more sustainable, but also cut their overheads.

"Our team installed a 66kW biomass boiler that along with the government's RHI will ensure that the technology pays for itself in less than 12 months, and will allow Riada to get on with delivering for their customers in a sustainable and cost-effective manner."

Norman Adair, Riada, said: "Like all businesses across Northern Ireland we have been hit by the increasing cost of our energy bills. While our business is energy intensive, we felt that the costs we were paying out previously in electricity bills were an excessive sum for a small organisation such as ourselves.

"We take our commitment to the environment seriously, but also needed to find a way of cutting bills without jeopardising production of our ice cream."

Paula Keelagher, market development manager for brites, added: "More and more companies are realising the incredible cost savings and environmental benefits associated with using a wood pellet fuel and once again our partnership with BS Holdings is paying dividends. Through using brites, Riada can also have the guarantee of having a secure indigenous fuel supply for the 20 years of the RHI."

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Exclusively Green

A Cotswolds golf club has increased its green credentials having installed a **Windhager** biomass boiler to provide heating for the club facilities and the adjacent Manor House Hotel

The Manor House Golf Club is situated in the Cotswold countryside overlooking the Castle Combe valley and provides 5 star accommodation as part of The Exclusive Hotels Group.

As part of a green initiative the company replaced its existing oil heating with a Windhager BioWIN wood pellet boiler system. The club will not only significantly reduce its carbon footprint but is set to save 52 percent a year on fuel bills and generate an annual £14,000 income from RHI.

The Manor House Golf Club found, like many other businesses, that its oil heating system was inefficient and proving extremely costly as fuel prices steadily rise and maintenance becomes a more regular necessity. The Exclusive Hotels Group has its own environmental agenda called 'Exclusively Green' with which they aim to reduce the impact the business has on the environment. This initiative has already seen the Manor House Hotel and Golf Club purchase all electricity from 100 percent renewable sources such as wind farms.

The oil heating system was costing on average £13,000 a year in fuel alone, using 20,000 litres of oil to heat the whole building, which includes accommodation, restaurant, bars and changing facilities. In contrast, the biomass boiler system installed will save around £6,500 in fuel a year for the club while increasing boiler efficiency to 92 percent. Combined with the significant payback the business will receive through the government's RHI scheme, moving to the greener alternative was an easy choice to make.

Managing director of the group, Danny Pecorelli, said: "We've made many decisions across the business to spend more on certain items which fit our green criteria. The green agenda is our number one priority, but having said that, in this case biomass has also helped us to reduce our overall utilities' costs."

The installation comprised two 60 kW Windhager BioWIN Excel wood pellet boilers in a cascade system, suitable for situations where a large and varying output is required. The BioWin Excel boilers feature wide modulating output ranges to consistently provide maximum efficiency and the cascade operating system controls the boiler output and demand.

Old money: Two 60kW BioWIN wood pellet boilers from Windhager have netted The Manor House Golf Club substantial fuel savings on oil

Peregrine Nicholls, managing director of Wessex Biomass, the installer chosen to undertake the project, said: " We'd worked with Windhager on eight projects of varying sizes before this one and on every job we've never had to deal with the client once the job was completed – testament to the high quality of its products and technology. Its central control system is great, as is the MES weather compensating control technology. For installers, you want to work with a trusted manufacturer that provides reliable products; Windhager has never disappointed."

On the green: The Cotswolds' Manor House Golf Club has supplemented its income with £14,000 per annum from the RHI

At a glance

2 X 60kW BioWIN wood pellet boilers
92 percent boiler efficiency
£14,000 annual RHI income
52 percent reduction in fuel bills

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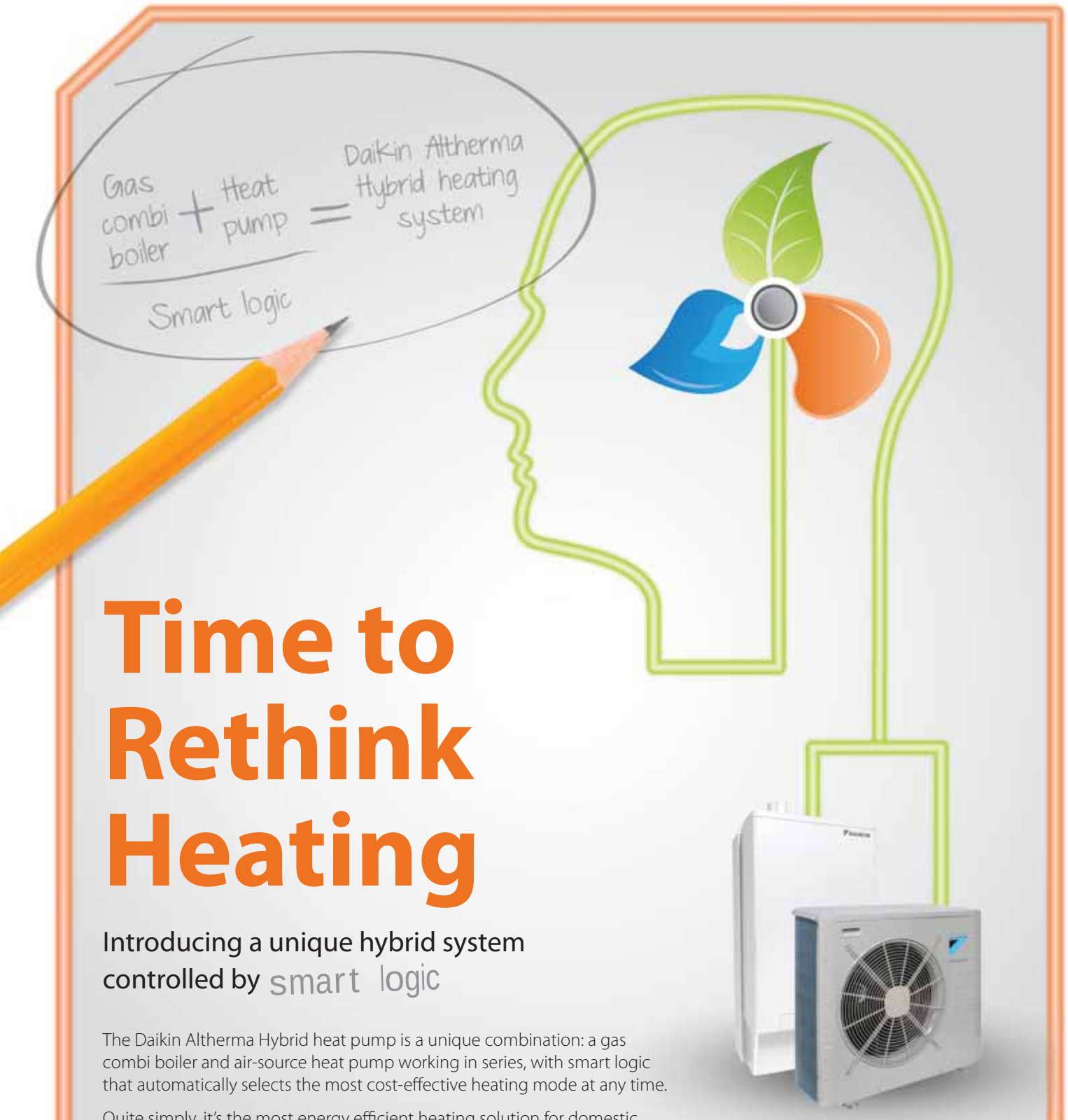

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Hitting new heights

Renewables 4 Business has successfully completed one of the largest on-roof solar PV installations in the UK

The installation, which totals a massive 681kWp, has been installed on the roof areas of potato producer E Park & Sons.

The system is split into two arrays, 94.5kWp on a cold store building and 586.5kWp on the main building. Over 65 kilometres of cable was used which if laid down end-to-end would stretch from Manchester to Sheffield. The total number of panels installed was 2,742.

David Hulme, managing director, Renewables 4 Business, said: "This installation is a credit to everyone involved in the project, including staff both from Renewables 4 Business and E Park & Sons. The client spent more than two years researching solar PV and looking to find a suitable partner for this project."

E Park & Sons' building and business activity created many unique challenges. The 24hr-a-day site has a one-way traffic system around it which could not be disrupted by regular deliveries of materials for the installation. Stringent structural surveys were undertaken to ensure the buildings were capable of supporting the additional 54 tonne weight loading. The local electricity connection also needed upgrading to cope with the additional generation from the solar PV system.

E Park & Sons now has more predictable, secure and stable energy supply costs whilst the PV system provides the business with an additional income and savings of around £100,000 per annum.

James Pepper, sales & marketing manager, E Park & Sons, added: "We chose Renewables 4 Business to install our Solar PV system as they demonstrated their knowledge, technical expertise and commitment to quality throughout the feasibility and planning phases. The whole team helped us every step of the way. They minimised any disruption to our business, a major concern of ours. I'm happily recommending R4B to the growers that supply us as well as to the customers that we supply."

Big money: E Park & Sons' 2,742 panel 681kWp PV system nets the potato producer £100,000 per annum in FiT income and energy savings

Social network

The Mayor of Wigan was visibly impressed with the latest ground source heat pump technology on a recent visit to **Shepway Court**, a sheltered housing scheme in Eccles, Salford

Official business: Wigan's Mayor Billy Rotherham is shown the GSHP installation at Shepway Court sheltered housing scheme, Salford, by Ground Heat Installations' managing director Dave Thompson and Jonathan Newton from City West

Mayor Billy Rotherham was interested in looking at work carried out by local businesses and discussed the possibilities for installing renewable technology across the borough.

The system was designed, specified and installed by Ground Heat Installations, based in Appley Bridge, Wigan. The system is the largest ground source heat pump ever to be installed in a sheltered scheme and is now heating all 40 properties.

City West Housing Trust, which owns and manages Shepway Court and 14,600 homes in Salford had the innovative heating system installed to replace the old expensive gas heating.

The installation comprises two 46kW Vaillant heat pumps supplied by twelve 150m bore holes from the gardens outside. New heating systems and unvented hot water systems have been fitted to each apartment and new radiators to communal areas. Significant savings have been made to the running costs of the new heating system compared to that of the old gas plant.

Nigel Sedman, assistant director of investment and regeneration at City West, said: "Since we installed the heat pump the costs for providing heating and hot water has been less than £4 per flat per week and we will continue to monitor this.

"As well as reducing energy costs we estimate that the carbon emissions from Shepway Court will be more than halved from 83 tonnes to 40 tonnes a year, which is the equivalent of taking 10 cars off the road."

Burning ambition

An education and environmental centre in the heart of the Lake District is practicing what it preaches as it shares new biomass energy with tens of thousands of visitors

The Field Studies Council's Blencathra Centre at Threlkeld, near Keswick, is celebrating a wood fuel installation which is expected to slash the charity's annual £56,000-a-year heating costs.

Due to difficult access, the brief specified the boiler house and wood chip store needed to be located on the periphery of the area to limit wagon deliveries through the site. This remote repositioning of the heating system was advantageous in that it could be placed to one side of the visitors' centre, saving space, but it presented a challenge regarding the terrain. The proposed location was a steep bank set beneath a narrow entrance road. The solution involved a reinforced concrete structure which maintained the stability of the road above the position of the new boiler house.

Cumbrian-based Barden Energy met the brief which was put out to tender. It supplied, installed and commissioned the system which will bring in yearly RHI income of around £40,000 and save approximately £18,000 on oil, electric and LPG bills.

Managing director Will Barden said Cumbria was fast waking up to the 'huge financial and carbon-cutting gains of biomass'.

He added: "We were delighted to be able to install a district heating scheme at Blencathra, which will save over 200 tonnes of carbon annually.

"Because the Field Studies Council is so influential in bringing environmental understanding to so many people, we were particularly pleased to be chosen for this project.

"Along with the centre's hydro technology, the renewable systems are working proof that green energy plays a vital role in all our futures – with measures that don't cost the earth!

"We have been instrumental across the county in bringing biomass to hotels, stately homes, educational organisations and businesses, including Rheged Visitor Centre and Newton Rigg College.

"Blencathra was one of our largest projects to date, fuelled by locally sourced woodsure-accredited wood chip and with a new state-of-the-art chip store."

The former sanatorium attracts around 18,000 overnight visitors a year, in addition to day guests and an increasing number of local organisations.

Head of the centre, Tim Foster, said the combination of biomass and hydro-electric power had reduced their carbon footprint by a massive 80 per cent.

He added: "We have succeeded in becoming a low carbon exemplar and our significant gains will be promoted across the educational sector, rural organisations and communities.

"We have been validated for the Cumbria Business Environmental Network Gold Award and as part of the Green Tourism Business Scheme."

Rural Challenge Fund and the Lake District National Park helped fund the project.

Money spinner: Biomass will net the Blencathra educational centre an annual RHI income of £40,000

On the edge: The boiler house was built away from the main buildings to reduce the impact of wood chip deliveries

Dynamic duo: Will Barden (Barden Energy) and Tim Foster (FSC Blencathra Centre) are delighted to have slashed the Lake District learning centre's carbon footprint by 80 percent

Figure it out

Generation tariffs for non PV technologies

Technology	Band (kW)	Tariffs (p/kWh) valid until 31-03-14
Hydro	≤15	22.23
	>15-≤100	20.76
	>100-≤500	16.41
	>500-≤2000	12.82
	>2000-≤5000	3.32
Wind	≤1.5	22.23
	>1.5-≤15	22.23
	>15-≤100	22.23
	>100-≤500	18.53
	>500-≤1500	10.05
	>1500-≤5000	4.26

(Source: OFGEM)

Number of MCS registered installers per technology

Technology type	Cumulative number	Registered January 14
Solar PV	2409	29
Biomass	398	10
Air source heat pump	901	12
Ground source heat pump	715	07
Solar thermal	1035	10
Small Wind	103	01
Total	3747	69

Number of MCS registered installations per technology

Technology type	Cumulative number	Installed Jan 14
Solar PV	510351	8041
Biomass	4210	196
Air source heat pump	26104	589
Ground source heat pump	7612	99
Solar thermal	6149	119
Small Wind	4267	24
Total	558893	9068

(Figures supplied by Gemserv)

Generation tariffs for Solar PV

Tariff band	FiT rate (p/kWh) valid until 31-03-14
<4kW	14.90
>4-10kW	13.50
>10-50kW	12.57
>50-100kW	10.71
>100-150kW	10.71
>150-250kW	10.25
>250kW-5MW	6.61
Standalone	6.61
Export Tariff	4.77

Domestic RHI tariffs

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

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

Green Deal

Month	Assessments	Live GD Plans (cumulative)
January 13	74	0
February 13	1729	0
March 13	7491	0
April 13	9522	0
May 13	12146	0
June 13	13517	0
July 13	13645	1
August 13	13086	12
September 13	13967	57
October 13	16674	219
November 13	15599	458
December 13	12388	626
Total	129842	–

(Source: DECC)

Cost comparison of heating fuels

Fuel source	kWh provided per unit of fuel	Efficiency of system (%)	Units consumed by house (kWh)	Price per unit of fuel (£)	Units consumed per annum	Cost per annum
Heating oil (kerosene)	10 per litre	90	25300	0.59 per litre	2530 litres	£1,493
Wood pellets	4800 per tonne	94	24300	235 per tonne	5 tonnes	£1,175
Natural gas	1 per kWh	90	25300	0.05 per kWh	25300 kWh	£1,265
LPG	6.6 per litre	90	25300	0.48 per litre	3833 litres	£1,840
Electricity	1 per kWh	100	23000	0.16 per kWh	23000 kWh	£3,680
*Air source heat pump	1 per kWh	290	7931	0.16 per kWh	7931kWh	£1,269
*Ground source heat pump	1 per kWh	360	6389	0.16 per kWh	6389kWh	£1022
Dual mode system 1						
Oil boiler (30% of heat load)	10 per litre	90	7590	0.59 per litre	759 litres	£448
*Air source heat pump (70% of heat load)	1 per kWh	290	5552	0.16 per kWh	5552 kWh	£888
Dual mode system 2						
Gas boiler (30% of heat load)	1 per kWh	90	7590	0.05 per kWh	7590 kWh	£380
*Air source heat pump (70% of heat load)	1 per kWh	290	5552	0.16 per kWh	5552 kWh	£888

Based on 23,000kWh needed to meet typical household's heating and hot water needs per annum. Prices and costs are indicative only and may vary.
*Calculations based on continuous operation at maximum efficiency. Fuel costs taken from Nottingham Energy Partnership.

RHI non-domestic rates

	Tariff name	Eligible technology	Eligible sizes	Tariff rate (pence/kWh)	Tariff duration	Reviewed tariff (from April 01 2014)
Small biomass		Solid biomass: Municipal solid waste (inc CHP)	Less than 200 kWth	Tier 1: 8.6 Tier 2: 2.2	20	No change
Medium biomass		Solid biomass: Municipal solid waste (inc CHP)	200 kWth and above, less than 100 kWth	Tier 1: 5.0 Tier 2: 2.1	20	No change
Large biomass		Solid biomass: Municipal solid waste (inc CHP)	1000 kWth and above	1	20	2.0
Small ground source		Ground source heat pumps, water-source heat pumps, deep geothermal	Less than 100 kWth	4.8	20	Tier 1: 8.7 Tier 2: 2.6
Large ground source		Ground source heat pumps, water-source heat pumps, deep geothermal	100 kWth and above	3.5	20	Tier 1: 8.7 Tier 2: 2.6
Solar thermal		Solar thermal	Less than 200 kWth	9.2	20	10
A2W heat pumps		ASHPs	All	N/A	20	2.5

(Source: OFGEM)

RHPP Phase 2

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

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

What data would you like to see on this page?

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Knowledge: Case studies

HEAT PUMPS

What: Banham Zoo heated by Dimplex ASHP

How: 60kW Dimplex LA 60 TU installed by Finn Geotherm

Result: 40 percent reduction in energy costs

Exotic inhabitants of Banham Zoo in Norfolk are enjoying tropical temperatures powered by an award-winning Dimplex air source heat pump installation.

Dimplex installer partner Finn Geotherm took on the project to provide a year-round subtropical environment and home for species including lizards, monkey, bats and exotic plants at the zoo's new Eureka! indoor attraction, which opened last year.

The solution, which was named Energy Efficient Initiative of the Year at the 2013 Energy Efficiency & Renewables Awards, includes a high power 60kW Dimplex LA 60 TU air source heat pump linked to a 1,000 litre Akvaterm thermal store, with heat distributed via six seperate temperature-controlled underfloor heating zones.

The system delivers the constant required heat at approximately 60 percent of the cost of a fossil fuel system.

Guy Ransom, Finn Geotherm's commercial director, said: "The building presented a major challenge for the heating system design. It not only needed to welcome the 200,000 people who visit Banham Zoo each year but also maintain a constant temperature of 20 degrees celsius, allowing the wildlife inside to thrive, regardless of the great British weather.

"It was essential that the new building incorporated the optimum low carbon heating and energy system, consistent with the highest environmental credentials of the zoo – not to mention minimising heating costs of course."

Banham Zoo's chief executive officer, Martin Goymour, added: "We're very proud of this attraction and the fact that we have achieved the best of all worlds for our zoo, with the controlled climate that really does provide greener energy and running costs that are so far even lower than forecast. So that's a great result and the added bonus is that it's of genuine interest for our visitors and school groups as well."

Jungle fever: Lizards, monkeys, bats and exotic plants are now kept at a constant 20 degrees celsius at Banham Zoo thanks to a Dimplex ASHP

SOLAR PV

What: Blackpool 26-room hotel goes green

How: 10kW array installed by Solarlec

Result: Energy bill savings and Feed-in Tariff income of £2,200 a year

Rooms in a Blackpool hotel are set to be serviced by solar after its new green owners turned to renewable energy.

Eco conscious hoteliers Neil and Silvia took over Auntie's Coliseum on Hopton Road late last year – and environmentally friendly updates were top of their list when it came to putting their stamp on the place.

Owner Neil Palin said: "There's so much wastage involved in running a hotel – we're trying to minimise this by introducing as many eco-friendly changes as we can.

"Small things like giving guests the option to keep the same towels rather than washing them daily and cooking food to order instead of regimented mealtimes have been brought in straight away and do make a noticeable difference, but we're keen to gradually incorporate larger scale changes to our energy consumption and expenditure too.

He added: "Electricity bills are enormous – up to £600 a month – unsurprisingly when you factor in guests leaving lights on and TVs running, so any help we could find to bring them down had to be a good move."

Neil and Silvia turned to Solarlec and quickly decided solar PV panels would be a great fit for the 26-room hotel.

Solarlec energy advisor Neville Costello said: "We've put in a 10kW system but there's room on the roof for more panels so this is something Neil and Silvia are looking into for the future. The current system will save and generate payments of over £2,200 each year and the savings will continue to increase as energy prices keep on going up! Even better, the nature of the business means they're in a fantastic position to utilise all of the energy produced rather than selling unused units back to the grid."

Sunny money: Blackpool hotelier Neil Palin has significantly cut his £600 monthly electricity bills with his 10kW solar installation

HEAT PUMPS

What: Luxury holiday homes opt for green heating solution

How: Danfoss 6-8kW DHP-L Opti heat pumps and solar thermal

Result: Lower carbon footprint and running costs

A developer in Fife, Scotland, has opted for ground source heat pumps to reduce running costs and lower the carbon footprint of six eco holiday homes.

Grangeview Holiday Homes is a development of six luxurious self catering cottages built on the site of a former farmhouse. The three and four bedroom cottages were fitted with DHP-L Opti heat pumps, between 6-8kW in output.

The ground source heat pumps were supplied through 300m of horizontal ground loops, which were laid in 1.5m deep trenches in land near the properties.

The heat pumps were part of a larger renewable energy system installed by Danfoss-approved installer Eco Coil Heating, based in Glasgow. The system also utilises extender buffer tanks, which enable the heat pumps to be combined with solar thermal panels to maximise the annual efficiency of the heat pump and hot water system. Use of the Danfoss extender means that the solar thermal panels pre-heat the hot water, which maximises efficiency, with the heat pump providing the added energy to boost to a higher temperature.

Stephen Craig, md of Eco Coil Heating, said: "It made perfect sense to install ground source heat pumps for these eco friendly holiday homes. The other options of oil or LPG would not have been appropriate, whereas ground source heat pumps, combined with the solar thermal means they are some of the most efficient and environmentally friendly heating holiday homes available."

Developers Mr and Mrs Keddie said: "We are really pleased with the Danfoss heat pumps, which provided us with the green energy solution we wanted for our holiday homes. Eco Coil Heating has done a great job of designing a complete heating system for the properties that reduces their carbon footprint and optimises their running cost."

Northern star: 300m of horizontal ground loops were needed to power six Scottish eco holiday homes via Danfoss GSHPs

BIOMASS

What: 19th century manor house swaps oil for biomass heating

How: 199kW woodchip boiler system

Result: £6,000 energy bill saving

A 19th century East Devon manor house has been given a 21st century makeover with the addition of a biomass boiler.

John-Michael and Lucy Kennaway, whose family have owned Escot House near Ottery St Mary for more than 200 years, investigated getting the system when the price of oil started to rocket. Not only will the system save them more than £6,000 per year in fuel costs, but has also reduced their carbon emissions by 95 tonnes per year.

The 199kW boiler, installed by SunGift Energy, is located in a purpose built boiler house in woodland at the back of Escot House and provides heat and hot water for the manor house itself and 12 other buildings on the estate.

The boiler uses woodchips supplied by local business Brendon Hill Tree Services, and will generate a return on investment of over 10 percent with £750,000 profit made over 20 years from RHI payments and fuel savings.

"The system at Escot really is an example of the most modern and efficient biomass technology," said Jamie Burnham, biomass system designer at SunGift.

"It shows that woodchip is a clean, easy-to-use fuel that fits in perfectly with the needs of a modern business. The boiler room and fuel store, which we purpose-built to Escot's requirements, are also extremely well presented, as opposed to the perception of old boiler rooms which often look unsightly and dirty."

He added: "The RHI provides businesses with a great opportunity to move away from their reliance on expensive, imported fossil fuels and allows them to invest in cleaner technology that uses a sustainable local fuel source, reducing their running costs and receive generous government incentives, turning a large overhead into a substantial income."

Grand designs: John-Michael and Lucy Kennaway, owners of Escot House in Devon, have shaved £6,000 off their annual fuel bill by switching from oil to biomass

My working week

Who: Simon Cross, commercial director, IXUS Energy

What: IXUS Energy is a biomass boiler distribution company working with installation partners across the UK

Branching out: Simon Cross, commercial director at IXUS Energy, is actively looking for new biomass installation partners

Supply and demand

Monday

After the daily inbox checking ritual, I head out to visit a number of sites with a local installation partner to help assess the feasibility of installing biomass at a range of sites. This is my favourite part of the job – I get to meet lots of different potential customers and I get to visit some incredible properties. Before heading home I put a call in to head office for an update on all orders placed over the weekend and to discuss any outstanding estimates I need to work on in the evening.

Tuesday

I try to work from home at least a couple of days a week – it's where I'm most productive. Today I need to get some estimates prepared for the sites I visited yesterday so I begin work on designing and specifying the systems for each property. We supply a wide range of different systems so no two systems are exactly the same; the job never gets boring! As these were challenging sites I put a call in to one of our design engineers – I'm fortunate to have a team of specialists on hand. I also speak to our technical director who has over 30 years' experience of biomass so nothing fazes him.

Wednesday

The day begins with an early morning meeting with one of our installation partners to discuss a new range of boilers we're planning on bringing to the UK. They are suitably impressed with our technical support capabilities and very enthusiastic about the new boiler range. At lunchtime I meet with the regional sales manager to discuss strategy for the potential roll-out of the new brand. Following this is another visit to a potential installation partner – a company with a good heritage in rural oil and LPG installations but no experience of biomass. This is not unusual – we are happy to guide (and fully train) any quality installer who can demonstrate excellent installation capabilities and customer service.

Thursday

First off is an internal meeting to discuss our order processing procedures. We recently upgraded our accounts software and we are now carrying out the final tweaks to get the most out of it. This features a computerised stock control system – essential for coping with the growing number of sales we're experiencing. Lunch involves a board meeting to revise our sales forecasts to take account of our newly expanded product range and discuss the additional sales and technical resources we will need to achieve these new forecasts.

Friday

Back on the road again – this time to assist an installation partner quoting on a number of small boilers for a social housing provider. The project requires a slightly different design of feed system to provide their perfect solution. We put in a call to the factory to discuss the changes we need and get agreement so we can source the necessary design changes. After a successful meeting I call at one of our own installation company's recently completed installations to check that all has gone to plan. I'm pleased to find the client is thrilled with the excellent fuel consumption and overall installation process – a positive end to the week.

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