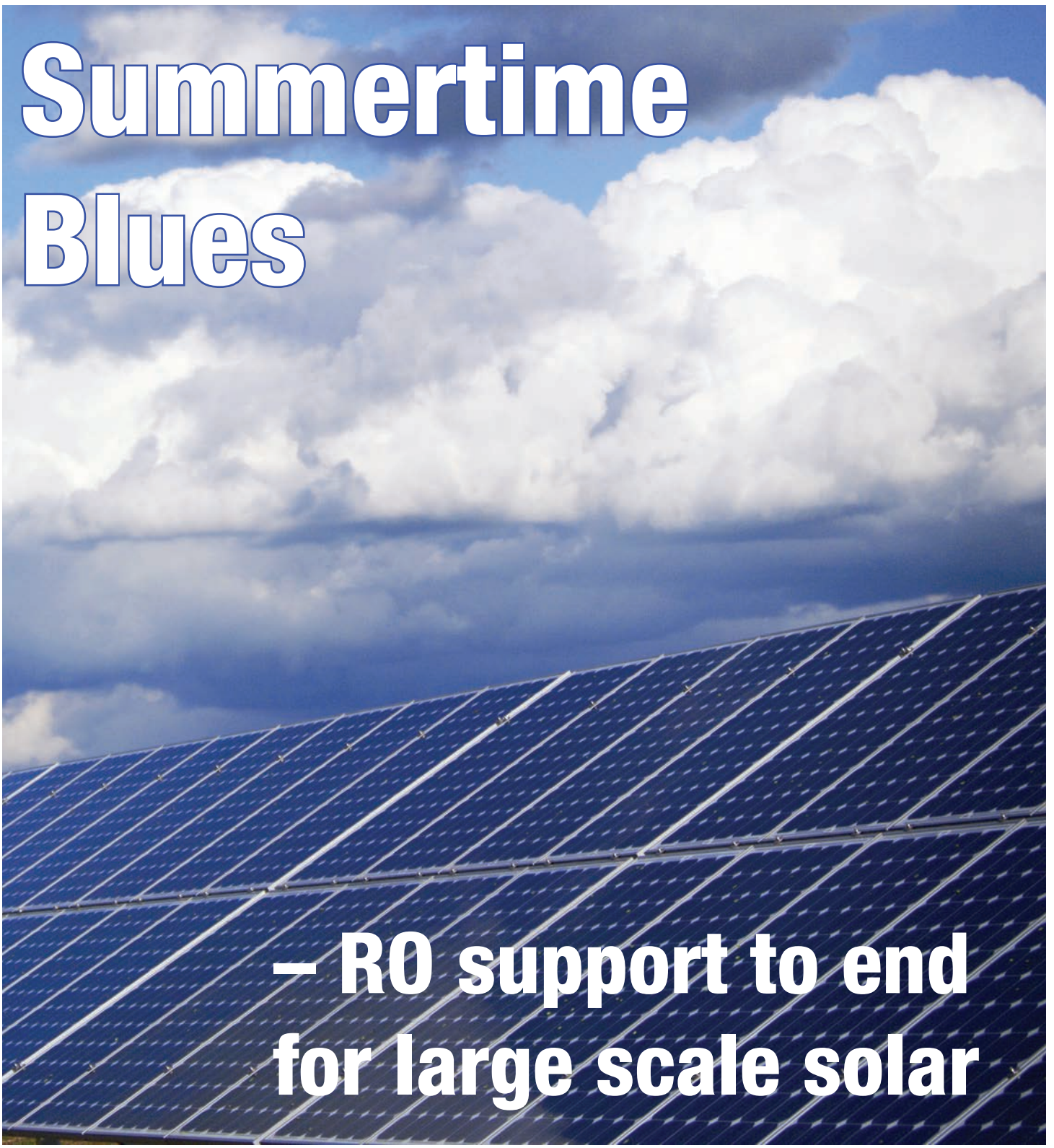
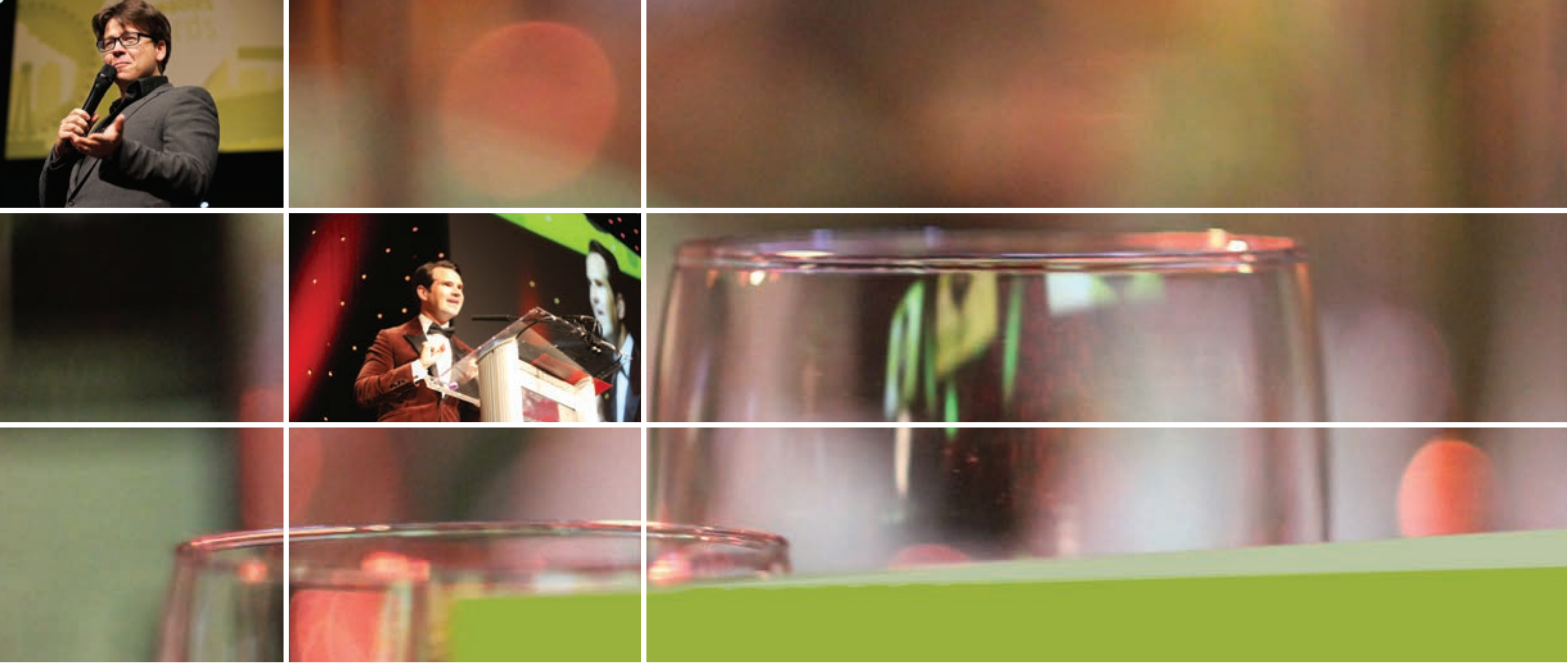
Renewable
ENERGY INSTALLER THE BUSINESS OF MICROGENERATION

SOLAR THERMAL SOLAR PV BIOMASS HEAT PUMPS WIND HYDRO June 2014



Summertime Blues

– RO support to end for large scale solar



The Energy Efficiency & Renewables Awards 2014

26 September 2014, Kensington Roof Gardens, London

Energy Efficiency & Renewables Awards

INSTALLERS WE NEED YOU

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ASHP Installer
GSHP Installer
Green Innovation
Residential Project (new build & retrofit)

www.renewableenergyinstaller.co.uk/awards/

Sponsorship
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Nominations
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http://www.heatingandrenewablesroadshow.co.uk

Renewable ENERGY INSTALLER THE BUSINESS OF MICROGENERATION

They giveth & they taketh away

Although I am not normally prone to bouts of casual blasphemy, this biblical maxim would seem a fitting analogy for another month in which we, the industry, were forced to endure the frustrations of paradoxical government policy.

Given a helpful leg up via the recent launch of the domestic RHI, our new found momentum has been swiftly jolted by a double threat to remove Renewable Obligation (RO) support for large scale solar and block onshore wind from further financial assistance beyond the next general election.

Defenders of the coalition's approach to energy would no doubt point out that these are mature technologies now sufficiently ripened for equal treatment under the more competitive regime of Contracts for Difference auctions. The industry has been left dismayed however that future deployment is being undermined by misguided efforts to make renewables more 'cost-effective' at a time when substantially more investment is needed, as opposed to less.

Curbing the development of large scale solar and wind will not bring down energy bills as per the misleading mantra currently emanating from ministers, but rather steadily increase them as we fail to wean ourselves off the insecure supply and volatile cost of carbon-intensive generation. We will never 'have enough' clean capacity until this job is complete.

In happier news, interest has been overwhelming since we opened for nominations in this year's Energy Efficiency & Renewables Awards. I'd like to remind readers that you only have until the end of June to put yourselves forward for consideration in one of 15 categories.

Attractive sponsorship opportunities remain for a limited time only which can be discussed with Jonathan Hibbert on 01565 626 760.

Contents

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"NEA believes the government must recognise that it is possible to ring-fence an element of the current domestic RHI budget to provide the necessary upfront capital support for low income households"
Maria Wardrobe p7

UK fossil fuels 'gone in five years'

A report from the Global Sustainability Institute has warned that Britain's indigenous supplies of coal, oil and gas will be exhausted in just 5.2 years.

Without a large increase in the proliferation of renewable energy, the UK's reliance on imported fossil fuels will substantially grow, threatening energy security.

Although this timespan is much shorter than expected, the news is even bleaker for France which has less than a year.

With nuclear power requiring over a decade to come online, question marks remaining over the viability of fracking, plus political upheaval in carbon-rich regions such as Russia and the Middle East, the sector is urging the government to realign its energy policy more heavily towards renewables.

Commenting on the study, RenewableUK's director of external affairs, Jennifer Webber, said: "This report is a timely reminder of the need to develop our nation's significant renewable energy resources to the maximum well before the UK's fossil fuels dwindle away to nothing. That's why it's puzzling that the Conservatives have said they want to stop financial support for future onshore wind projects, especially as onshore wind is the cheapest mainstream form of renewable energy we have in the toolkit.

In the pits: North Sea gas and oil plus the UK's coal stocks will run out sooner than expected expediting the need for large scale renewable energy, warns the Global Sustainability Institute

"The prospect of running out of fossil fuels in the UK by the end of the decade should focus minds on the absolute necessity of guaranteeing the generation of new low carbon power."

Paul McCullagh, chief executive of UrbanWind, added: "Renewables is without doubt a readily deployable and key part of the balanced solution to avoiding the energy crisis and reducing the UK's carbon footprint. It is time for David Cameron to stop electioneering and start taking pragmatic action to provide real, tangible and meaningful support for the renewables sector, including wind energy."

Judges confirmed for Energy Efficiency & Renewables Awards

REI is delighted to announce the four judges who will join editor Paul Stephen on the panel for this year's Energy Efficiency & Renewables Awards.

Bill Wright (ECA), **Dave Sowden** (SEA), **Robert Burke** (HETAS) and **Virginia Graham** (REAL) will run the rule over entries in the run up to the awards ceremony at London's Kensington Roof Gardens on Friday 26 September.

Readers only have until June 30 to enter the industry's most prestigious awards in the categories to the right. Interest has already been strong and nomination packs can be requested by emailing **Dan@EnergiseEvents.co.uk** or by visiting the new website **http://www.heatingandrenewablesroadshow.co.uk/awards.php**

2014 award categories

- The Contribution Award
- Commercial Project
- Residential New Build Project
- Residential Retrofit Project
- Green Innovation
- Biomass Installer
- High Efficiency Boiler Installer
- Insulation Installer
- Controls Installer
- Solar PV Installer
- Solar Thermal Installer
- Air Source Heat Pump Installer
- Ground Source Heat Pump Installer
- Commercial Installer
- Energy Efficiency & Renewables Installer

For sponsorship opportunities please contact Jonathan Hibbert on + 44 (0) 1565 626760 or **jonathan@andpublishing.co.uk**

Events

Intersolar Europe
02-04 June Munich, Germany
http://www.intersolar.de/en/intersolar-europe.html

RHI Roadshows
17-19 June All Energy Environment Expo. ExCel, London
26-27 June Eco Technology Show. The Brighton Centre
28-29 June The Southern Homebuilding & Renovating Show. Sandown Park, Surrey

NAPIT Expo
09 July The Rum Warehouse, Liverpool
http://www.napitexpo.co.uk/

Energy Efficiency & Renewables Awards
26 September, Kensington Roof Gardens
www.renewableenergyinstaller.co.uk/awards/

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

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

Heating & Renewables Roadshows
Autumn 2015
www.heatingandrenewablesroadshow.co.uk

DECC proposes solar RO scrapping

DECC has proposed closing the Renewables Obligation (RO) to 5MW+ solar farm applications from April 2015.

It follows the recent publication of The Solar Strategy document which endorses a move away from large rural solar farms towards populating more commercial rooftops.

For all solar over 5MW, the industry is expected to switch to the new Contracts for Difference (CfD) scheme from next year, but the STA argues that CfDs are far less accessible for the SMEs that are prevalent in the solar sector.

In what it has labelled as 'an own goal', the STA says the proposals will cause huge disruption to the solar industry's speed of cost reduction, should they go through.

There will be no change to the RO for this current year and investments already made will receive a one year grace period after the RO closes to 5MW+ solar in April 2015. The proposals will also not affect the Feed-in Tariff for household installations.

STA ceo Paul Barwell said: "The costs of solar power have kept on falling, in large part thanks to the growth and learning in our successful UK industry. We had forecast solar could be cheaper than onshore wind by 2018, but for this to happen we needed stable policy sustaining a high-volume market. The government is actually moving to slow down solar's cost reductions towards grid parity.

"The industry will be alarmed by these proposals and surprised to be singled out for harsh treatment. It does look like the government is seeking to define the energy mix and hiding behind the false excuse of 'budget management'."

Old news: DECC proposes removing RO support for large solar farms as it bids to increase the number of commercial rooftop systems

REI gains EEC CPD approval

REI is now an Energy CPD Approved publication.

The European Energy Centre, which provides training, conferences and publications to 5,000 individuals across Europe each year, has approved the magazine as suitable for Continued Professional Development (CPD) for delegates gaining qualifications in renewable energy technologies.

Paolo Buoni, EEC director, said: "I believe REI will be of great benefit and an indispensable read to EnergyCPD members made up of professionals and students in the renewable energy sector."

www.EnergyCPD.co.uk

Ecotricity saves Evance from administration

Green electricity provider Ecotricity has bought small wind turbine manufacturer Evance out of administration.

Having manufactured and supplied almost 2,000 turbines across the globe over the past 10 years, Evance was placed into administration in April following a 20 percent cut to the Feed-in Tariff for <15kW wind turbines.

Ecotricity founder Dale Vince said the purchase would ensure vital expertise were retained and that new turbine models currently in the pipeline were not lost to the market.

"So many small wind companies are going out of business in Britain due to government policy," said Vince.

"With the green sector responsible for around 10 percent of Britain's GDP growth, that's hard to fathom.

"Despite this we're very pleased to be in a position to save Evance, green sector expertise and new technology that we will bring to market in the next 12 months."

Will the RHI help the fuel poor?

With OFTEC and other dissenting voices claiming the domestic RHI is reserved for only 'the wealthy few', **Maria Wardrobe** of fuel poverty charity NEA calls on the government to tear down financial barriers and make the scheme accessible to all

Heat has long been the forgotten element of UK energy policy, however, last year the UK government set out its proposed approach to decarbonising the sector. The general approach of the Strategy is to squeeze fossil fuels out of heating by 2050 through demand reduction, development of district heating and a massive expansion of electric and renewable forms of heating in suburban and rural areas. The strategy highlights that these technologies have an important role in alleviating fuel poverty. However, NEA has concerns that despite the potential, without further intervention, there will continue to be a lack of equal access for the poorest households.

The main issue relating to accessibility of microgeneration technologies is that existing incentive mechanisms, such as the Feed-in Tariff and now the new domestic RHI, provide an operational incentive rather than a contribution towards the capital costs associated with the installation. NEA believes up-front capital costs represent one of the biggest barriers to increased take-up of renewables by financially disadvantaged households. Where capitalisation of an operational incentive is offered (or a free PV type deal is accessible to Registered Social Landlords) NEA's research indicates that it is not always clear that the benefits that accrue to the tenant are not consistent with affluent households. As long as this key financial barrier remains unaddressed, fuel poor households will largely be unable to benefit from the operational incentives targeted at these technologies.

So, what can be done?

In short, NEA believes the government must recognise that it is possible to ring-fence an element of the current domestic RHI budget to provide the necessary upfront capital support for low income households. Following termination of the Warm Front scheme in January 2013, England is the only UK nation without a government-funded energy efficiency programme. Before the closure, eligible applicants to Warm Front were guaranteed to receive assistance and could benefit from a grant of up to £6,000 to those off the gas-grid. The grant could be paid for measures such as insulation and alternative heating such as more efficient electrical heating, oil heating systems and renewable heating. Moves to an RHI ring-fence would address this current gap in provision.

One thing is for sure, the replacement programme, the ECO, in its current form is not going to fund these measures.

Therefore NEA will continue to urge policy makers to accept the need for further changes to the current schemes and the need for further adequate resources. The recent proposed changes to the ECO further underline the need for additional support, especially for fuel poor households inhabiting solid wall properties. In this context, NEA is committed to promoting the wider benefits that a much more ambitious energy efficiency programme can provide. Specifically, NEA will continue to support the objectives of the Energy Bill Revolution campaign and continue to help develop the positive case for recycling revenues from environmental taxes such as EU-ETS and the Carbon Floor Price back into energy efficiency programmes that can help beat fuel poverty.

Back to the start

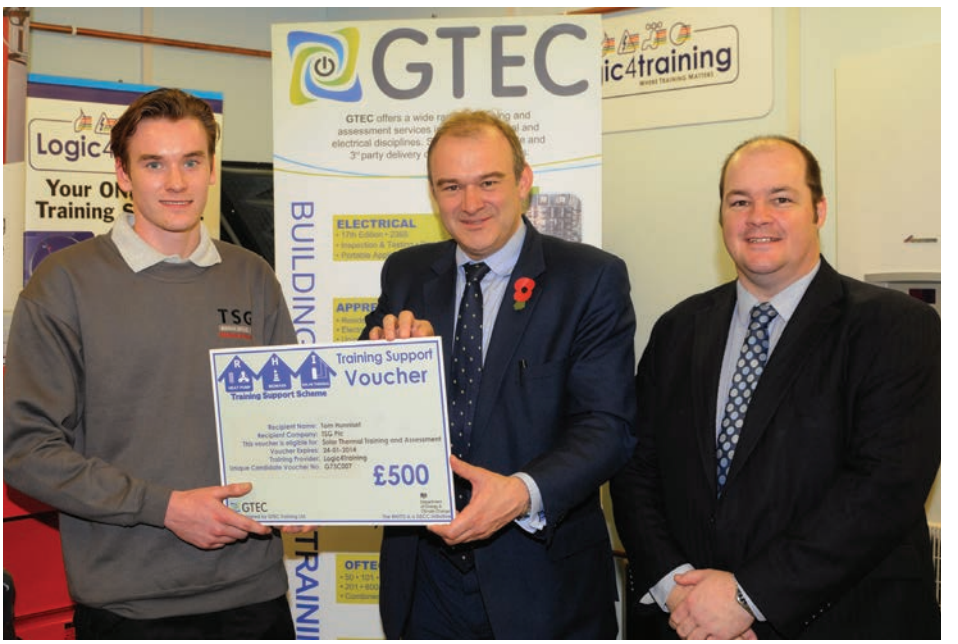
Launched to great fanfare last October, the RHI Training Support Voucher Scheme has recently seen its budget increased to £750,000 to assist installers with the cost of training in renewable heating technologies. REI caught up with **Tom Hunisett**, who was the first person to receive a voucher, and his boss **John Holloway**, from TSG Building Services

John Holloway: TSG has been established for 52 years, initially delivering heating installations, gas maintenance, construction and electrical services. We started recognising the potential of renewables six years ago, starting off with solar thermal. At that time it was very much a cottage industry but we were keen to push it forward and could see the potential, it was important to us to be part of it from the beginning.

In the main, TSG's focus is the social housing arena, which has been quicker to get on board with renewables due to local authority pressure and the RHPP. We see the domestic RHI as our way into the private sector, it's where we've got to be as a company to continue reaping the rewards renewables have so far afforded us.

The RHI presents an exciting opportunity for the building services engineering sector and we are confident that it will generate a good amount of interest from homeowners, interest that will see TSG, and businesses that take similar steps to up-skill, reap considerable success in the future. We're particularly well placed to meet its demands with a few years under our belt delivering numerous heat pump, solar PV and solar thermal systems to countless social housing properties.

Tom was an ideal candidate to be put forward for the first RHI Training Support Voucher recipient; he's enthusiastic and positive with lots of potential to progress – a great ambassador for TSG and renewables installation in general, hopefully someone that will encourage others to get involved.



Learn and earn: Tom Hunnisett (left), TSG Building Services, is already eyeing up other renewable technologies having qualified in April to fit solar thermal with financial assistance from the RHI Training Support Voucher Scheme

Tom Hunnisett: I'm a gas installer by trade, starting off with TSG as a plumbing and heating apprentice. I've been installing air source heat pumps for around three years, a key product for our social housing customer base.

Moving into the renewables arm of building services engineering is exciting and rewarding. The technology is interesting and the pace of change is moving rapidly. At the end of the day, our reliance on fossil fuels has got to stop so I see greener ways to heat and light our homes becoming more mainstream.

The RHI Training Support Voucher Scheme is a great incentive for installers to get involved, and I'm honoured to be the first engineer to receive one. Once this training's finished, I'll have solar thermal and heat pumps under my belt but I'm keen to keep learning and fit other types of renewable technology in the future.

Tom redeemed his voucher this April, on a Solar Thermal Hot Water course at Logic4training's Luton centre.

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AQUAREA

For more details, visit: **www.aircon.panasonic.co.uk**

Final reminder

This month's column is to remind installers and manufacturers regarding the extension of the deadline for the implementation of MCS 012, and use of compliant products under the MCS scheme

MCS 012 is designed to provide ongoing independent, third party assessment and approval of companies who wish to demonstrate that their pitched roof installation kits or components meet and continue to meet the requirements of this standard.

Please note, the requirements of this Standard are not applicable to installations on flat roofs which will be covered by a separate Standard.

Earlier this year, MCS reviewed the situation in advance of the original 31 March implementation date for MCS 012. It was found that, whilst a significant number of applications for the MCS 012 certification of pitched roof installation kits and components have been received by Certification Bodies; just 21 products had been certificated as MCS 012 compliant at time of writing.

As a result of this small number of approved products confirmed as being certified for use, and uncertainty over the timing for completion of testing, certification and listing of products currently in the certification process, it has been agreed by MCS that the mandatory implementation date of MCS 012 will be delayed by three months to **June 30th 2014.**

MCS has taken this decision to protect installers who may have found themselves with a dramatically reduced number of MCS 012 certified products available for use on projects from 1st April.

The June 30 deadline will not be extended.

Those manufacturers who have already obtained certification and correct registration by 31 March are commended for their professional approach and timely works to achieve compliance.

Manufacturers who have not yet achieved compliance are urged to complete their works with utmost urgency.

Pollard's Patter

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

So the domestic RHI is launched and applications are being submitted which is good news indeed. It's good for consumers, particularly those who do not have access to mains gas; it's good for installers looking to broaden their businesses and it's good for those manufacturers and distributors who have invested in the market.

It's a world first of which we should be proud but now we need to see a transfer from policy to delivery.

The officials at DECC responsible for the scheme have been very busy in attending lots of events, including many of ours, to both give out information and to listen to reactions and comments. This approach is to be welcomed and encouraged.

Now we must see how effective the scheme is in accelerating the uptake of renewable heating systems and, whilst very early signs are favourable, it is much too soon to make any meaningful conclusions. No doubt many people will be keen to see the scheme statistics. Monthly updates of progress will be published on the gov.uk website. The monthly data will include the estimation of the total amount of committed expenditure for each tariff for the next 12 months. This will be based on applications accredited and applications received.

After three months we will also see the first round of legacy applications from those that received Renewable Heat Premium Payments before 20th May 2013.

So far, so good.

Making the most of RHI

Although much attention has been placed on the level of installations which will be supported by the domestic RHI, legacy applications can also be made until 09 April 2015, explains **Robert Burke**, HETAS

Now that the domestic RHI is here, we need to make sure we're making the most of it. Having waited for so long it seems slightly surreal that the system is now in place. Reports are that the take up so far has been slow, but then the take up at the start of the non domestic RHI was also slow, but accelerated to become a great success. We expect to see the same pattern in the domestic sector, and both installers and manufacturers have been putting the necessary MCS approvals in place to take advantage of the new business opportunities.

Customers who installed a renewable heating system before the RHI was launched on 09 April 2014 may also be eligible for payments under the scheme. These are known as legacy applicants, and includes individuals and organisations who received the Renewable Heat Premium Payment (RHPP). At the time of writing OFGEM has approved over 500 legacy applications, and their enquiry line has been busy with calls from both consumers and industry. At this stage enquiries are split almost equally between biomass, heat pumps and solar thermal. The published figures of MCS installations show that biomass is now the second most regularly installed technology after heat pumps, so there is very clear potential for biomass to become one of the top two heating technologies under RHI.

There are some subtle differences for RHI legacy applicants in that the heating system doesn't need to meet current MCS standards as long as it was MCS certified at the time of commissioning. Biomass systems don't need to be metered for payment if it's not sized to heat the entire property, and it doesn't need to meet the air quality requirements which installations after 09 April 2014 must do. Legacy applicants have the benefit of being protected from tariff reductions if at any stage the government decides to change these due to budget constraints for the RHI scheme.

The timing of applications has been phased as the government expects large numbers of households to apply. Customers who didn't receive RHPP funding can apply immediately, including those who received RHPP vouchers but didn't use them. RHPP recipients who applied for funding prior to 20 May 2013 can apply for RHI funding from 09 July 2014, and those who applied for RHPP funding after 20 May 2013 can apply for RHI support from 09 October 2014.The great thing about allowing legacy applications is that all those installers and customers who were forward thinking enough to anticipate the domestic RHI will be able to benefit from payments. There is great potential for the scheme with over 100,000 Green Deal assessments which have already been undertaken, and which are the pre-requisite for householders joining the scheme. There are over 600 biomass MCS approved products, and the majority of these are also registered with the RHI Emissions Certificate online database which HETAS is maintaining as part of the scheme and which can be accessed online at **www.rhieclist.org.uk**. Installers and businesses are also getting on board with the scheme, but more MCS applicants will be needed as and when demand increases, as it did with the non domestic RHI.

We've recently streamlined the MCS application process for installers. The network of HETAS approved training centres has also been expanded to meet demand, and HETAS offers a combined competent persons and MCS registration package which is financially very attractive for installers.

The timing of applications has been phased as the government expects large numbers of households to apply

"Seasoned pros can benefit from continual up-skilling to ensure they stay at the top of their game" Mike Blakeley P31

CURRENT AFFAIRS

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

After an initial burst the domestic RHI got off to a slow start with less than 160 accreditations in the first two weeks, most of these being legacy applications. It will take time for new systems to be installed and accredited but I have heard of an increase of interest from potential clients. OFGEM are well prepared for this scheme using the experience gained from the non domestic RHI.

The press has been full of news that the government will be giving grants to Green Deal applicants for a range of measures ranging from insulation to the use of storage radiators. Figures of up to £7600 have been claimed to be available per client. As yet though there are no details of how to apply and when the finance will be delivered. It is a shame that the measures did not include any renewable energy measures such as PV. These installations are not fully covered by the Green deal as the FiTs payments cannot be included in the calculation for the 'Golden Rule' on payback. This means that the client has to finance about >60 percent of the cost before they could borrow the remainder under a Green Deal plan. An additional subsidy, such as the new measures announced, could galvanise the industry again. The PV Solar Strategy has helped the industry but did not identify sources of finance, merely offering encouragement. An additional shot in the arm is just what the industry requires to get it back into full gear and delivering the government's intentions on PV power installed.

NSC gathers pace

The National Solar Centre continues to ramp up its activities and outputs, reports **Steve Pester**, BRE

In April we held a well-attended gathering at Kew Gardens to launch our Biodiversity Guide for solar developments; hot on the heels of our Planning Guide for solar farms. These two documents are free to download (**www.bre.co.uk/nsc**).

BRE is also about to release a new version of the widely-used guide to simplified wind loading calculations for solar panels on roofs (DG489) and a guide to the safe selection and use of DC isolators. A guide to the performance of PV systems on non-domestic buildings was published last year. The NSC website upgrade will be completed over the next few weeks and we will then be able to offer all of these and other key solar publications from one place.

Aside from publications, the test site for side-by-side comparison of solar panels and inverters is due to be constructed at the Eden Project site during the summer and we are currently signing contracts with manufacturers who are keen to prove the performance and quality of their products.

These initiatives, as well as our consultancy services, such as independent inspections and fault diagnoses, are all aimed at supporting the emerging solar market by providing solid, unbiased information for installers, developers, financiers, distributors and end users.

The Eden Project biospheres

TECH TALKING

Heat pumps and flexible living

Following on from last month's article discussing suitable choices for heat emitters, heat pump specialist **Bob Long** looks at the importance of lifestyles requirements and occupants' specific heating needs

Consideration of lifestyle should be an integral part of system design, particularly when the heat source is to be a heat pump. Designing a heat pump system to optimise upon the economics of operation can be much more complex than designs employing combustible-fuelled counterpart.

Heating systems powered by combustible fuels such as natural gas or oil achieve much greater operational flexibility, able to match lifestyle needs much easier than a heat pump powered system.

When referring to lifestyle, I am referring to the basic use of the property, and by whom.

No matter what you may have read about it being more economical to maintain a steady temperature in a home as opposed to allowing a dwelling to cool down and re-heat, it is absolutely wrong!

There is no economic merit in heating an empty home.

A conventional combustible-fuelled heating system has the advantage of being able to input large amounts of energy into a dwelling in a relatively short period of time, through the ability of the heat source to run high water temperatures, causing the emitters (radiators) to deliver large amounts of energy when needed.

This is not generally possible with a heat pump, unless the heat emitters are capable of delivering similar large amounts of energy, on demand.

In many instances, a high temperature radiator panel will raise the air temperature in the room to a habitable level, before the temperature of the actual building fabric is satisfied.

Many heat pump system emitters, such as underfloor (UFH), or even retrofits employing existing panel radiators, cannot achieve this and so users find themselves running the heating system for many hours, sometimes unoccupied, to achieve the correct level of heating for the hours of occupation.

Heat pump systems designed for low occupancy homes should therefore differ from those designed for high levels of occupancy.

Assuming the dwelling may one day be sold, a low occupancy design will cater for all eventualities, but will necessitate the use of high output emitters wherever rapid heating results are required.

The type of high output emitter is largely confined to wall or duct mounted fan/coil units, as the output from panel radiators is limited by surface area and will, in almost all cases, be physically impractical.

UFH systems are also limited by water temperature and surface area.

When selecting fan/coil units, it is important to note the output at a specific working fluid temperature, and this can be quite difficult as manufacturers' brochures are not generally too keen to display the relatively poor output achievable.

A further limiting factor is the amount of on demand energy available from the heat pump.

In an example of a heating system designed to produce 10kWh of thermal energy, it would be impossible to supply the total quantity of energy required to heat a whole property in one hour, but it is possible to heat one or two priority areas in this short time period, and allow a longer time frame to heat low priority areas.

High and low priority areas should be defined by occupancy habits, suggesting that maybe the lounge and kitchen/diner are high priority, whereas bedrooms and hallways could be rated as low priority, and where an extended warming-up period is not going to impact too severely on living comfort.

Remember, in retrofit installations, your customer will have lived with the flexibility of a combustible fuelled boiler, and it is paramount that they are not disappointed by their green energy replacement technology.

Two minutes with . . .

Who are you?
Jodi Huggett, business development director at 4Eco

What do you do?
We manufacture and sell the immerSUN power control device for PV and wind. The immerSUN can be installed into homes or businesses, and to divert excess power from microgeneration systems directly to immersion, space or storage heaters instead of exporting back to the National Grid.

Where are you?
We're based in the Lincolnshire Wolds

How's business at the moment?
Our next generation immerSUN, released six months ago, is selling fast. Customers have been delighted with how much money they're saving on their energy bills.

How could business be better?
It's an interesting time for renewables right now, however, some of the chancellor's recent statements seem like a u-turn from the 'greenest government ever'. I think that the public are taking it upon themselves to invest in green technology now, meaning there's a tangible renewables zeitgeist.

Who do you admire in renewables?
Steve Howard, IKEA's head of sustainability. He pushed for the company to become the first big business to really challenge itself environmentally. I saw him speak at a conference recently and he really inspired me.

What's the best business advice you've ever received?
The customer is undoubtedly the most important part of your business; so it's important to never lose sight of what the customer wants.

How are you going green?
All of our packaging is sustainable. We're expanding our headquarters too, installing LED lighting and a wood-burning stove. We're also installing solar PV panels, which we'll use alongside our immerSUN, of course!

Q&A

STEVE HICKSON

Hydratech

What have you got planned for the rest of 2014?
To continue developing the excellent relationships Hydratech has built with companies operating, installing and maintaining renewable energy systems. We are the only UK based formulator specialising in the manufacture of inhibited heat transfer fluids and will continue to invest heavily in R&D to expand our innovative product range. Most recently, Biotherm was launched to provide long lasting protection for biomass heating systems and we look forward to seeing the market warm up as individuals take advantage of the domestic RHI.

What do you see as the growth area for renewables?
The general interest in renewable technologies has been raised since the launch of the domestic RHI. Biomass offers huge opportunities providing the correct infrastructure is in place and there are enough trained and registered installers to meet demand. As Hydratech manufacture and supply specialist fluids for solar thermal, ground and air source heat pumps as well as the previously mentioned Biotherm for biomass, we are hoping to benefit from an increase in the commercial application of heat pumps and the opportunities for renewables in off-gas areas.

How is your company cutting its carbon footprint?
From sourcing of materials to wate disposal, we have started to monitor all aspects of our operation. We are currently investigating energy efficient lighting and PV while working to achieve ISO 14001.

Steve Hickson is managing director at Hydratech

Protection racket

With the wind industry likely to play a central role in the fight against climate change, David Taylor, business development manager at **UFW**, calls for investment to be protected amid cuts to the Feed-in Tariff

Climate change is a very serious issue, and it was only recently that prime minster David Cameron said he believed man-made climate change to be 'one of the most serious threats that this country and this world faces'. It is, therefore, no surprise, that there is increasing focus on a planet-wide push for greener energy.

Climate change minister Greg Barker announced last year that he wants a decentralised power to the people – not just a few exemplars, buts tens of thousands. He wants us all to do more to integrate new policies that help families produce their own renewable electricity.

But despite the rhetoric from the ministers we have just seen a substantial cut in the Feed-in Tariff rate for wind turbines up to 15kW – those which largely serve the rural, domestic, farm, school and small business based sector, where a combination of the Feed-in Tariff and renewable energy supply bring affordable energy independence to thousands.

So I suppose one must ask, why are we penalising those very people trying to reduce their energy costs and make a contribution against climate change? And, perhaps more importantly, what's the alternative?

We have recently been privy to the second of three publications by the UN's Intergovernmental Panel on Climate Change, and it is one of the most comprehensive investigations into the impact of climate change ever undertaken; it makes distressing reading.

The report cites that a global mean temperature increase of 2.5C above pre industrial levels could lead to global aggregate economic losses of between 0.2-2 percent; put simply a 2 percent reduction would wipe $1.4 trn off the world's economic output.

Cutting investment now will put British manufacturers out of business and make it hard for communities to generate their own electricity

The evidence is there: farm scale wind energy is still a great investment on many levels.

Small wind is a manufacturing success story, and the UK is one of the windiest countries in Europe, and domestic energy prices look set to rise.

Turbines are designed to capture wind and, unlike most conventional power plants, they do not pollute. 2014 to date has been blighted by floods and extreme weather, and evidence suggests that carbon dioxide is at its highest level for 800,000 years.

Capturing wind energy is one of the key ways in which we can work to reduce dependence on traditional energy sources. In doing so, we will see more manageable energy costs for all, a boost in the de-carbonising process, and ultimately a reversal in the impact of climate change - it's a solution I firmly believe will continue to build momentum as more and more people are educated on turbines.

And across the sector, manufacturers have been working to improve efficiency, lifespan and raise production levels so that Feed-in Tariff support will be an increasingly smaller part of the equation.

It's right that as more farm size turbines are installed support is scaled back, but cutting investment now will put British manufacturers out of business and make it hard for farmers and communities to generate their own electricity. We need to collectively nurture this investment.

The wind energy industry is working hard to raise awareness of the importance of farm scale energy, and to ensure that more proportionate planning requirements which recognise the difference between farm scale turbines are put in place.

We all need to wake up to the current situation, and work together to ensure the future of this industry, and the environmental wellbeing of this country and abroad. There isn't an alternative.

Risky business: Unabated climate change would wipe $1.4 trn off the world's economic output, warns David Taylor, business development manager at UFW

We all need to wake up to the current situation, and work together to ensure the future of this industry

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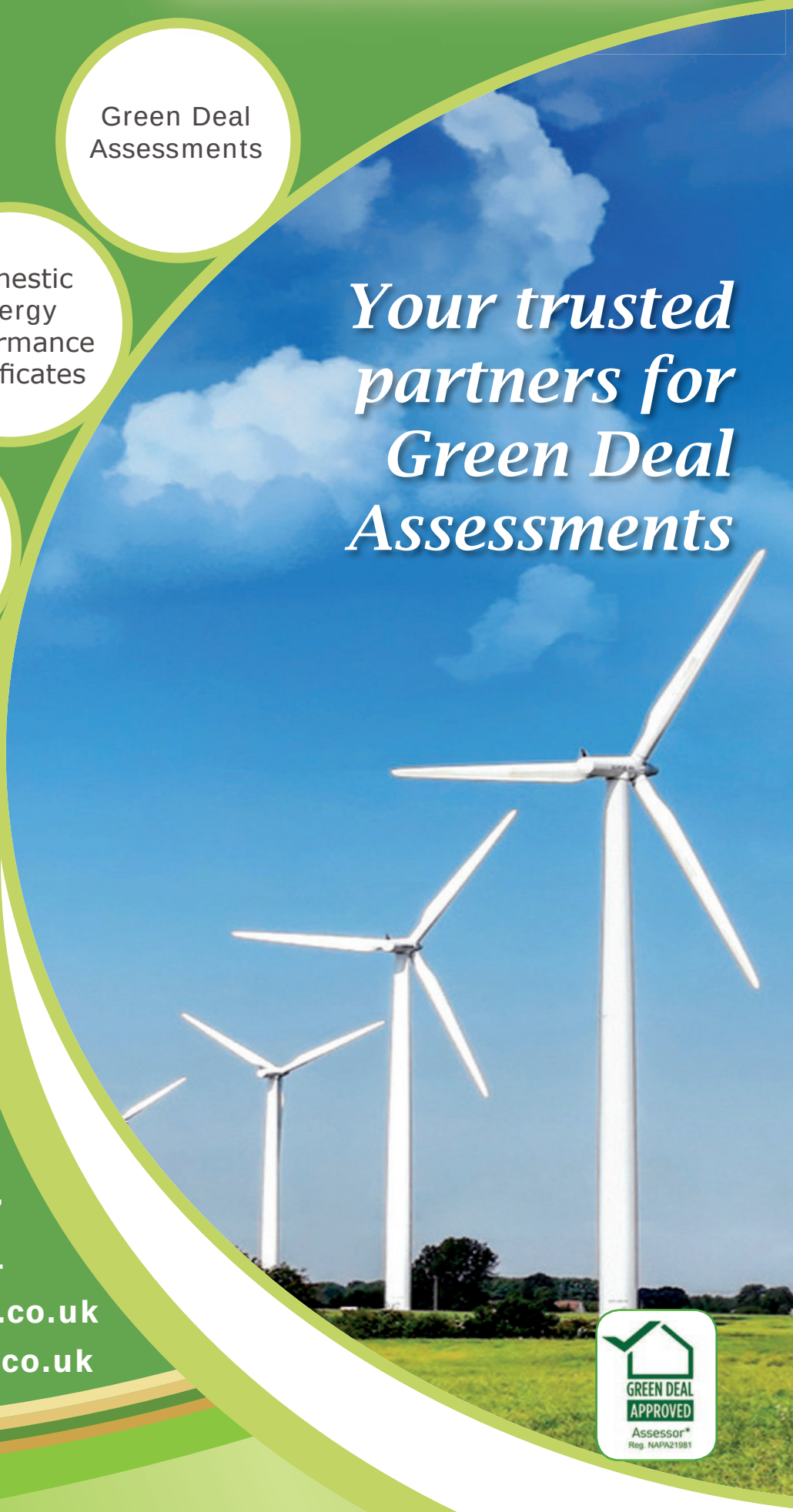

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Green Dealing with it

Following the introduction of the domestic RHI and the mandatory requirement for a Green Deal Assessment, **Nish Dattani**, director of Green Assessors, explains what is entailed in the process and highlights some of the challenges and concerns being raised by installers

What's involved in a Green Deal Assessment?
The Green Deal Assessment (GDA) comprises of two aspects; an Energy Performance Certificate (EPC) and an Occupancy Assessment. The EPC shows the current and potential energy efficiency of the home and is the basis under which the deemed kWh usage is derived to determine the RHI income. The Occupancy Assessment involves a more detailed analysis about the householder's lifestyle and energy usage. The aim of this is to gain a better understanding of how the property is used and to provide a better indication of the appropriate energy efficiency and renewable energy improvements and the cost savings likely to be achieved.

Why is the heat loss calculation performed by an installer different to that determined by the EPC?
The key aspect of the domestic RHI is the deeming calculation, whereby the householder is paid for every unit of renewable heat generated as derived from the EPC. Often the notional heating and hot water demand derived from the EPC is very different from that estimated by the installer. The main reason for the difference lies in the implicit assumptions that underpin the EPC assessment, which is based on Reduced data Standard Assessment Procedure (RdSAP) methodology. The EPC assessment does not reflect occupancy and incorporates standardised assumptions around running hours and internal mean temperatures. The installer is sizing the heating system to meet the demands of the property and its occupants and is focused on worst case scenarios, so as to ensure demand for heat and hot water is always met.

The differences can be quite significant and this poses a difficult challenge for the installer to advise accordingly and may affect the investment decision by the householder as to whether to proceed with an installation. Our advice to installers is to encourage the householders to get a GDA carried out early in the process, so as to definitively determine the level of RHI income they will receive.

Why are the energy cost savings estimated by the installer very different to that presented in the Green Deal Report?
Often installers will present an estimate of the running cost savings for a householder moving from a fossil fuelled heating system to a new efficient renewable heating source based on the heating demand for the property as determined by their heat loss analysis. However, the Occupancy Assessment estimates the likely cost savings in relation to the actual energy usage and consumption. For those householder's that are low energy users the running costs savings can be significantly lower than those presented by the installer.

What else can the Green Deal Assessment help with?
The Green Deal Assessment helps to identify and recommend the energy efficiency measures that are appropriate for the property and the savings likely to be achieved. Our advice is always to focus on fabric first and there a number of grants and cashback incentives currently available. The government has recently announced the Green Deal Home Improvement Fund which allows householders to claim cashback of upto £7,600 after installing a range of measures, with up-to £6000 available for solid wall insulation.

What is clear, given the level of conflicting information, is for installers to partner with credible Green Deal assessors who not only understand renewable heating technologies but are able to advise householders on the wider RHI & Green Deal policy and the implications the assessment will have on their RHI income.

Simple solution: The Green Deal Assessment process needn't be daunting for installers as long as they partner with a reputable assessor organisation, says Nish Dattani, director of Green Assessors

The social network

Amit Rosner introduces his company Generaytor.com, an online community that helps people go solar

When I and cofounders Paolo Tedone and Idan Ofrat began building the company in late 2012, we saw the potential for existing solar homes to be a guiding light for friends and neighbours. Now that the UK has crossed the 500,000 installation mark, the potential is so much greater. Generaytor provides a social platform for existing solar system owners to share their success, and a crowdsourced 'try before you buy' simulation for people considering solar. Clients include leading installers in the UK and USA, and Generaytor's software is also used in IKEA shops to provide solar energy forecasts for prospective customers.

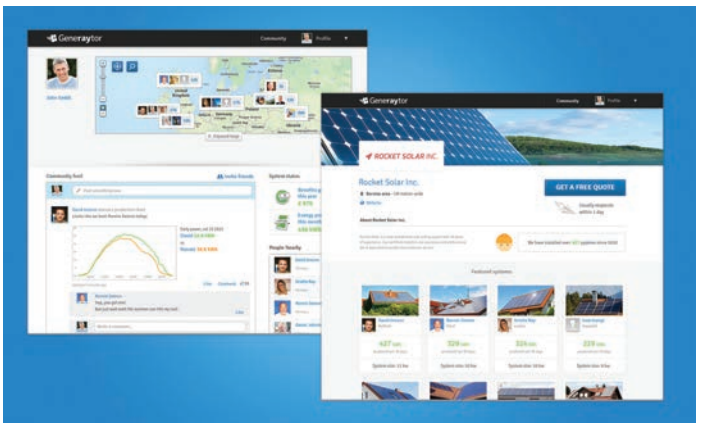
Why choose this service?

By bringing solar homeowners online, awareness becomes scalable, spreading virally, until every suitable homeowner knows going solar is the right thing to do. This is our vision, not only for the UK, but worldwide. Generaytor today has members in more than 20 countries, primarily in North America and Western Europe.

Generaytor's USP

Generaytor is fuelled by an unlimited resource: the passion and creativity of our members. By enabling solar customers of all different installation companies, system designs, equipment types, and locations to connect their monitored solar data in real time, the result is a sum greater than its parts. Each time a solar homeowner celebrates an achievement, for example, by sharing a record solar performance chart, he or she becomes an ambassador for solar energy. Generaytor also facilitates solar sharing through Facebook and Twitter and enables people to connect with the bigger picture and how their own energy fits in. As one of our members put it: "I'm getting solar envy and have become addicted to seeing who won the kWh race each day!"

The wealth of solar production data being fed into our platform also enables an ongoing, personalised solar experience for people considering solar. Any homeowner exploring solar can use Generaytor to create a virtual solar simulation, visualising the energy and income solar could produce. While solar calculator tools such as PVGIS (or PVWatts in the US) offer a snapshot, virtual solar is a patent-pending try before you buy journey. The simulation updates each day based on the performance of solar homeowners nearby, providing a new level of transparency and confidence in the benefits of solar. Seeing ones' neighbours install systems of their own adds social proof that PV is a wise decision. Interaction in the community enables installer recommendations and advice.



High tech: Generaytor.com allows prospective customers to interact directly with installer's previous clients, offering another dimension to old-fashioned testimonials, says founder Amit Rosner

Advantage installer

For solar installers, Generaytor provides an opportunity to bring their installed portfolio to life. I know that for successful installation companies, past customers are among their greatest resource. This is why many installers include customer testimonials and project galleries on their own websites. But quotes and photos are static. In contrast, on Generaytor, customers' enthusiasm is unleashed, offering prospective new customers the chance to interact with real people who had a great experience, and even observe their solar systems in action. The old adage 'show don't tell' is fitting. With a dynamic map of their projects on Generaytor, installers enable new prospects to browse system owners nearby, see who did their installation, and request a quote.

Generaytor is completely free for homeowners, and the company makes it effortless for installers to invite their existing customers to join the community. Many of the services Generaytor offers to installers are free as well. To explore the community, visit: **www.generaytor.com**

For solar installers, Generaytor provides an opportunity to bring their installed portfolio to life

Best laid plans

The National Skills Academy for Environmental Technologies has recently been granted an extension to its licence by the Skills Funding Agency, following a successful first three years. REI talks to **Kevin Dowd**, network operations manager for the Skills Academy about the organisation's plans going forward

Following your licence extension, what are the Skills Academy's plans for the future and what do you consider your major successes to date?
Over the last three years we've managed to achieve considerable national reach, with well over 100 Skills Academy centres in locations throughout England, Northern Ireland and Wales. One of the primary tasks is to look at this spread and identify areas where we are lacking (as well as those meeting saturation point) to find a balance that ensures every installer in the UK has access to industry leading training. This will mean enlisting more Skills Academy providers and we may lose some existing ones. Trainees can rest assured, however, that this process will only serve to strengthen the quality of their Skills Academy options.

In addition to approving centres, we have also forged invaluable links with employers and Trade Associations - such as the Electrical Contractors Association and Building & Engineering Services - in order to better service customers and create training programmes that directly meet their needs. We have a good relationship with several manufacturers, some of which are approved training providers. Part of our success has been down to manufacturer engagement and investment and we hope to build further relationships to ensure this continues in the future.

Our ultimate goal is to be the go-to training provider for low carbon and renewable energy technologies in the built environment. We have worked hard to create a quality offering that ensures installers get the right skills to take advantage of the business opportunities presented by the upturn in the economy and government strategy. The domestic RHI has just been launched, an exciting development that should help to strengthen the green arm of the building services engineering market and therefore help drive the need and success of the Skills Academy.

There has been some restructuring in the Academy recently, with Cathryn Hickey stepping down and you taking the helm. Kevin, what do you bring to the table and what legacy does Cathryn leave behind?
I have worked alongside Cathryn for the last three years, helping her bring the Skills Academy up to its current position. Prior to that, I was operations manager for SummitSkills, where I was employed for seven years. All in all, I've got a good understanding of the sector and its requirements plus a general interest in greener ways to run our buildings. Being part of building services engineering, particularly in terms of low carbon and renewable technology measures, is exciting. We all have a commitment to help reduce our carbon footprints and by working for the Skills Academy I have a more direct hand in making this happen.

Cathryn did an excellent job and made the Skills Academy what it is today. The Skills Academy was almost entirely her concept, she created the framework and my job now is to build on and develop this, to further meet the needs of installers and their employers.

Changing faces: Network operations manager Kevin Dowd pays tribute to the 'excellent job' done by the organisation's former head Cathryn Hickey

Our ultimate goal is to be the go-to training provider for low carbon and renewable energy technologies in the built environment

Keeping up appearances

With the domestic RHI set to create an upsurge in demand for ASHPs, early installations needs to be of the highest quality to secure a fragile consumer confidence, argues Global Energy Systems commercial consultant **Daniel White**

Now that the industry finally has a stimulus package and customers have even more incentive to invest in air source heat pumps, we hope to see an age of positive, reinforcing case studies and a real increase in confidence and momentum across the industry. The RHI has promised so much, for so long, it now needs to deliver.

Two key factors will help to build this future. Firstly, well specified and well installed systems, and secondly fit for purpose heat pumps. The work that MCS has done on tightening up installer standards supports full performance disclosure, extensive education of customers, solid experience and competence for installers and rigorous specification standards. This emphasis on ensuring that customers know what they are buying, understand the benefits that are on offer and the changes they may need to make to attain them and that the installers are also fully aware is an important foundation.

Upper hand: As both an installer and manufacturer of ASHPs, Global Energy Systems benefits from its ability to input customer feedback directly into product development, says the company's commercial consultant Daniel White

Knowledge gap

Informing consumers what an air source heat pump can and cannot do and debunking the myths created by some poor, pre-regulation installations is a key issue. The RHI, if supported by the government, will bring renewable heating options into the publics' consciousness. Overcoming the sceptics is still a task ahead. Great installations creating case studies and word of mouth, coupled with the promotion of the RHI will help deliver this.

Global Energy Systems as an installer and manufacturer can create a feedback loop directly from customer experience to product development. From the early trial units the needs of end users have been the key driver. This engagement allows a better understanding with resellers, subcontractors and customers as training, support and education are all based on these lessons.

In addressing many of the challenges that operating air source heat pumps in the UK's cool damp climate present, Global Energy Systems are offering a fit for purpose heat pump. The data from the factory installed monitoring system, Eco Link, allows a steady stream of data to ensure systems are running effectively, year round.

The RHI has promised so much, for so long - it now needs to deliver

Informed decisions

The Eco Link system brings together several trends; energy portals, to give consumers information on which to base informed decisions about energy use, education on the impact of heating decisions, virtual support to offer cost effective maintenance and metering for future subsidy offers. It is a key tool and one that offers real benefits. By offering it for the first three years in the purchase price Global Energy Systems can ensure that customers get the best that they possibly can out of their air source heat pump from day one.

A rash of bad press now would be very harmful

By manufacturing in the UK Global Energy Systems can support installers closely through having key personnel in the market and can train on the same site as manufacturing. Local, flexible manufacturing can also accommodate bespoke work in areas such as colour and ducting. Customers who are fully analysing carbon footprints are also keen to hear of a product that begins life in the UK, thus minimising transport emissions.

There are a growing number of great air source heat pump installations in the UK, using different approaches and brands. The tide of awareness and confidence is building to a flow. The next big step, with the onset of the RHI will be critical; a rash of bad press now would be harmful. It's time to ensure the numbers stack up, the radiators are well sized and that the customers' recommendations build us a bright future.

Eurotrash

Since 01 January the UK Waste Electrical and Electronic Equipment (WEEE) Regulations has required the PV industry to finance the disposal and recycling of solar panels. PV CYCLE UK has been supporting this process since 2013, explains managing director **Jan Clyncke**

Enter new European obligations

The EU law states that producers of PV panels – all firms or individuals manufacturing, selling, reselling or importing PV panels in a European country – are now subject to the so-called Producer Responsibility. That means they must organise and finance the waste collection and management of used products.

In addition, the UK introduced a different system for distributors of PV panels, companies selling panels to private households, to prevent them from bearing costs related to the collection of other WEEE consumer products with different treatment needs. Distributors will be responsible for a PV-dedicated collection infrastructure exclusively dedicated to solar panels. PV CYCLE has been given approval by the UK secretary of state to operate the only take-back system outside of the municipal collection system dedicated to PV panels.

To comply with the WEEE law, Producers of PV panels have a number of responsibilities. Topping the list: a legal obligation to register with a Compliance Scheme, reporting import or UK-manufactured data to the authorities, taking financial responsibility for waste, and informing end-customers and the general public about how they treat their discarded panels. The collection and treatment must remain free for end-users.

That's where PV CYCLE comes in - which has been running its own system for years, offering the most cost-efficient solution. On the one hand, PV CYCLE has eleven collection points for customers with small quantities of panels. For larger waste quantities, we arrange ad-hoc pick-ups. Since we started our operations in 2010, we have collected 9,225 tonnes of waste throughout Europe, 60 tonnes in the UK alone.

Recycling techniques

The modules sold on the European market are based on two main different technologies, silicon and non-silicon PV. Silicon-based modules are largely made of flat glass and usually recycled in a glass recycling line. After the manual dismantling of the aluminium frames and junction boxes, the modules are then shredded, allowing the recovery of up to 85 percent of ferrous and non-ferrous metals, glass, silicon flakes and plastics. Glass is often reused as fibres, insulation and packaging products.

The most common types of non-silicon based modules are cadmium telluride modules (CdTe), copper indium selenide (CIS) and copper indium gallium (di)selenide (CIGS). In addition to a crushing process chemical baths dissolve the various semiconductors, which are then sorted and processed in dedicated glass and semiconductor recycling facilities, recovering up to 95 percent of such components.

Salvage squad: PV CYCLE has collected 9,225 tonnes of PV panels for recycling across the EU since 2010, a process now being funded by the PV supply chain

PV Vs other electronic products

If you thought recycling PV panels is the same as any other WEEE products, think again. PV panels cannot take advantage of municipal collection points designed for other WEEE (radio, TVs, PCs) because they are heavier and need to travel longer distances to reach the recycling facilities. In addition, because the average lifespan of a panel is +25 years, and the first installations of PV in Europe took place in the '90s, PV waste streams are still relatively low.

Therefore, PV CYCLE UK, a Producer Compliance Scheme initiative of PV CYCLE, has been representing the PV sector to the British government on WEEE matters, suggesting the recognition of PV waste as a specific category, and campaigning to inform the sector about its new obligations. Today, PV CYCLE UK is the only accredited PV-focused Producer Compliance Scheme, supporting local PV companies from a UK-based office opened in 2013.

Home affairs

An immersion PV controller is the answer to getting the most out of domestic solar systems, netting your customers hundreds of extra pounds a year. **Bob Morris**, Apollo Solar Electric, explains

Around half of the annual energy generated by a domestic solar PV system is exported to the grid; for a 4KWp solar PV installation this is energy which could be worth over £250 per year at today's prices.

The export tariff pays the generator 3.3p or 4.6p per unit for 50 percent of the total units generated on the assumption that half of the generated units will be exported, but this can still be less than one quarter of the cost of buying the exported units back.

Since much of our energy consumption will be at times when no energy from PV is being generated we will always need to buy the exported units back in the form of electricity, gas or oil.

To get the most from a microgeneration system it is important to use as much of the generated energy as possible at the point of generation, i.e. in the home. The problem with this is that at the times when a PV system is producing the most energy, consumption in the home is often at its least.

Using as much as possible of the energy being generated sounds simple enough but it's more difficult in practice than many people imagine. Many appliances do not present a static load, their power requirement constantly varies. In addition the energy generated by the PV array is also constantly varying, and even with a careful eye on generation and the use of household appliances it is almost impossible to closely match supply with demand.

The answer lies in automatically storing the excess energy produced during the day until it can be used later. Every unit of energy that is stored rather than exported will avoid the cost of repurchasing it later. A further bonus is that in the majority of cases the export payments will still continue to be received as these are based on units *generated* and not units *actually exported*.

One obvious method that comes to mind for storing excess PV energy is to use batteries. Battery storage has the advantage that the energy can be stored until needed and can then be used for any purpose such as lighting or powering appliances. There are however significant disadvantages with battery storage solutions including size and weight of the batteries, system complexity, battery life expectancy of around five years and cost. The cost to implement a worthwhile 10-15KWh of battery storage would be several thousand pounds.

For many homes however there is an alternative energy store already available at no cost – hot water. All homes need hot water and 75 percent of British homes use a hot water cylinder to store hot water. A 200L hot water cylinder at 65°C can store around 10.5KWh of energy.

By using an intelligent immersion PV controller that can monitor PV energy production together with household energy demand, any excess energy can be captured and stored in the form of hot water until required. The cost of fitting an immersion PV controller is just a few hundred pounds and could have a payback of less than two years.

At current FiTs levels an average 4KWp PV system can be expected to generate around £880 per year in FiTs Revenues and electricity cost savings. Fitting a PV immersion controller system enables the household to almost double the usage of the onsite generated energy, adding up to £280 per year to the income and savings from the PV system. For an all electric household an increase of over 24 percent.

One direction: Diverting surplus PV generated electricity to an immersion heater will prevent it being lost to the grid and being 'bought back' later, says Bob Morris of Apollo Solar Electric

Every unit of energy that is stored rather than exported will avoid the cost of repurchasing it later

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Five of the best

From its experience cleaning over 100,000 solar panels of different types and sizes in all parts of the UK, Clean Solar Solutions is in a good position to provide advice on solar panel cleaning and how it can benefit PV installers. **Steve Williams**, managing director, gives REI his top 5 facts for installers

Cost neutral: Extra revenue generated by cleaning solar panels always outweighs the cost of cleaning, according to Clean Solar Solutions md Steve Williams

1. Solar panels do need cleaning

In times past, solar panels have been sold by installers as being 'maintenance-free' and 'self-cleaning'. The reality is somewhat different. Solar panels, like every outdoor flat surface are exposed to the elements. Rain, wind, traffic, birds, harvest time and sea air all bring their own types of dust and detritus which accumulates on solar panels, as it will any other surface. This accumulation blocks out a percentage of sunlight from the array, causing the output to drop. This can significantly impact the ROI.

2. How often solar panels need cleaning varies

Our experience of cleaning many types of solar arrays all over the UK has led us to some interesting ratios. Generally, solar panels in rural locations get dirtier than those in urban areas. Here is the list of types of arrays that need cleaning from most frequent to least frequent: Roof mounted agricultural arrays, roof mounted commercial arrays, ground mounted solar panels and finally roof mounted residential arrays. Residential arrays benefit from just an annual clean, whereas farms see financial benefits from cleaning their panels every 3-4 months.

3. Dirty solar panels have damaging financial implications

Solar panels that are not cleaned can lose a large amount of output and it will take the end-user longer to see their ROI. The larger the array, the larger the financial losses. Even with the cost of our solar panel cleaning, in virtually all cases, the extra money generated from having clean solar panels easily outweighs the cost of the cleaning.

4. Solar panel cleaning should be part of your O&M package

If you do not already offer an operations and maintenance package to your new and past clients, you are missing a trick. With the installation side of the industry being more unsteady these days, many installers are now looking to other revenue streams for a steady source of income. Offering an O&M package is ideal. Your client may begin to see a decline in their solar array output and naturally, the first person they ring will be the installer. To already have possible solutions in place such as solar panel cleaning and inverter servicing is seen by many as excellent customer service.

5. Solar panel cleaning should be carried out by professionals

There are many window cleaners who are now looking to add solar panel cleaning to their list of services. However, the vast majority lack the health & safety knowledge needed in order to clean solar panels safely. Solar panel manufacturers recommend solar panel cleaning is to be done by professionals and is not a DIY job, it carries more risk and therefore it is recommended that they are cleaned by those with a thorough knowledge of how to protect themselves from risk and who are fully insured.

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Busting the biomass myths

Innasol's 2014 Renewable Heat Report uncovered that the biggest hurdle facing the biomass industry is a lack of awareness amongst consumers. **David Rae**, director and cfo, demonstrates how the company is now working to set the record straight, one myth at a time

Myth #1: RHI financial incentives are difficult to secure and payback takes a long time

FALSE

This is understandably a key concern. Firstly, the so-called 'elusive' financial incentives are not difficult to secure - the government's RHI scheme can be obtained simply by submitting an application to Ofgem. Quarterly payments will follow according to how much heat is produced by the biomass boiler. Another worry is that the upfront costs of installation and equipment are too much to justify switching: this is also not true. There are quite a few options for homeowners to consider. Loans can be secured from organisations like the Carbon Trust or Energy Saving Trust and even some banks. It's a popular misconception that the return on investment timescale can be lengthy. Under the domestic RHI scheme, full payback is normally achieved in five to seven years.

Myth #2 Biomass heating poses a threat to woodland areas

FALSE

This is the main misconception standing between consumers and lower energy bills. Wood used in biomass boilers is sustainably sourced: wood pellets are often made from both recycled waste wood and sawdust which would otherwise be wasted. Approximately 70 percent of UK wood residue is not suitable for anything high value other than wood fuel – this is proven by the fact that sustainable direct felling of trees for wood fuels is approved by the Forest Stewardship Council and the Grown in Britain programme. EU legislation deems it compulsory for companies to guarantee that biofuels are produced sustainably in terms of biodiversity protection, water pollution, soil degradation and protection of habitats and species.

Myth #3: Feedstock has to be manually loaded into the boiler

FALSE

The truth is that wood pellets or chips are automatically loaded into the boiler via the help of a vacuum or auger fuel feed system. Fuel needs only to be sourced once or twice a year and stored in a dry environment. Once burned, the ash can easily be disposed of as domestic waste or used as a fertiliser. Modern systems have automation features which allow customers to control their systems via a smart phone/ PC/ tablet, making them convenient and easy to control.

Wrongful dismissal: Innasol identified that consumers' chief hang up on switching to biofuels is the false belief that sourcing fuel is a threat to natural woodland and tree cover in the UK, says director and cfo David Rae

Myth #4: Biomass boilers are difficult to install and maintain

FALSE

Many believe that biomass systems require huge amounts of storage space and time. Biomass systems do require space; however installation is simple and quick. A certified professional will install the correct size efficiently. For boilers less than 20MW, a license is not required to operate - this again makes the process quicker and simpler.

Myth #5: Biomass heating systems emit CO_2 and are environmentally unfriendly

FALSE

The amount of carbon dioxide (CO_2) emitted into the atmosphere by biomass systems is the same amount that the plants and trees would have released during its decomposition, making them carbon neutral energy systems. On top of that, the efficiency level of biomass boilers is one of the highest at almost 95 percent. Hence, the amount of carbon dioxide released is negligible compared to conventional boilers.

Back to basics

With the recent launch of the domestic RHI, now is a great time to become a biomass boiler installer and reap the financial benefits. **Mike Blakeley**, who heads up IXUS Energy's accredited biomass training programme outlines what a successful biomass installation entails

One size doesn't fit all

Installers need to help homeowners choose a biomass boiler that's right for them in terms of size and energy requirements. To establish the best option, a site survey is vital at the beginning of the decision making process. For instance, a small pellet boiler could fit into a small boiler room or even a utility room, whereas larger boilers require more space and need to be housed in outbuildings. The project just needs to be sized appropriately to meet the needs of the property.

Planning permissions

Those involved in the installation of a biomass system have a duty to share relevant information and guidance to homeowners who are making the switch to biomass. Planning permission is often an area of uncertainty for customers. Although it is unlikely that planning permission is required for the installation of a biomass system within a house, a general rule for installers is that if a customer's flue exceeds the height of the roof by more than one metre, planning permission should be sought.

For homeowners living in listed buildings, the local planning authority should also be approached to determine whether consent is needed. It goes without saying but, if an outbuilding is to be constructed for storing fuel or equipment, the same rules that apply for other extensions and garden outbuildings apply.

Building regulations

Building regulations do apply to biomass installations. Factors installers need to take into account will be ventilation, noise and general safety. Regulations will also be applicable to any plumbing or electrical work carried out in relation to the project, so keep this mind.

Choosing the right fuel

Homeowners new to biomass will need guidance on how different biomass boilers are designed for specific fuel types. The boiler choice needs to match the chosen fuel which will be determined by a range of factors including local availability, storage space and access, and whether the customer wants a fully automatic system or a manually fed boiler, for example.

Storing biomass fuels

A biomass store can be a purpose designed and built structure, either above or below the ground. For woodchip and log stores good ventilation will be necessary to prevent the build-up of condensation and prevent the formation of mould, the spores of which can present a serious health hazard should they be inhaled. Good air flow can also assist in reducing composting of the fuel which can result in the loss of energy content and prevent excessive temperature build up and potential fires if the fuel isn't as dry as it should be. In contrast a pellet store needs to be completely airtight to contain any dust generated by filling the store and prevent the fuel from absorbing atmospheric moisture.

Extra mile: Biomass are not 'fit and forget' systems with installers needing to provide customers with guidance on fuel types, building regs and other considerations, says IXUS Energy director Mike Blakeley

Good design of the biomass fuel store, taking consideration of delivery and extraction of fuel supplies and ease of access for maintenance, forms an essential part of a good installation. Fuel storage is a key area covered by our training programme at IXUS Energy as it can often get overlooked. Like everything, careful planning and thorough knowledge ensures a happy outcome for both installers and their customers.

Training programmes aren't just for those starting out on their careers. Seasoned pros can benefit from continual up-skilling to ensure they stay at the top of their game and know everything there is to know about biomass.

SOLAR PV

What: Exeter medical practice switches to solar power

How: 10kW system installed by Sungift

Result: Seven year payback

Exeter-based Mount Pleasant Health Centre has had solar panels fitted to its roof to reduce its high energy bills.

The busy medical practice opted for the system to tackle its large energy usage. In the spirit of the centre's continued commitment to the public, its management says it was keen to look at ways to reduce its carbon footprint.

The centre chose local company SunGift Solar to undertake the work.

The practice now proudly displays a 10kW solar PV system on its roof, which is being used to provide power for the centre's lighting, IT infrastructure and specialist equipment such as ECG machines. As the centre uses its electricity throughout the day – when the sun is shining – it uses the majority of the energy that the system generates, rather than having to export it back to the grid.

The installation should generate enough solar energy each year to power the equivalent of five homes. With a payback period of just seven years the investment offers a substantial return.

Practice manager, Julie Croze, said: "Not knowing anything about solar energy, the terminology was daunting, but everything was explained so clearly.

Self consumption: As a heavy daytime user of electricity, The Mount Pleasant Health Centre uses the majority of its PV-generated power rather than exporting it to the grid

"If you have the space why not capitalise on it. It really is first class, looks great and has been installed in such a neat and tidy way."

SunGift's Joe Perry added: "Rising numbers of health centres are looking to solar PV to reduce their overheads and bring in additional income. We're seeing systems that are achieving a 20 percent return on investment which means systems are paid off in as little as five years and the additional income can be used to help with practice's general running costs."

POWER CONTROL DEVICE

What: Excess PV power diverted to immersion heater rather than national grid

How: 4eco's immerSUN

Result: An increase in consumption of self-generated power from 20 percent to up to 100 percent

Two years ago, Richard Fuell became the first person to own an immerSUN microgen heating control system, which diverts the surplus power generated by his panels to his immersion heater.

Up until then his 2.5kW solar PV system, installed on to his Devon home the year before, had been automatically shipping back into the grid all of the excess clean energy it created during daylight hours.

He then found himself having to buy back energy from the grid in the evenings, counter-intuitively, in order to heat hot water to power his household heating systems.

He was so pleased with the results that when he heard 4Eco were developing a new, next-generation immerSUN at the end of 2013, he was first in the queue.

Power games: Richard Fuell, the first person to own an immerSUN microgen heating control system, now uses up to 100 percent of the power his PV system generates by diverting it away from the grid

"I was surprised at how much of the electricity I was generating was simply being exported back to the grid. I'd always been impressed with just how much money the first immerSUN saved me, so I was really keen to get my hands on the new model.

"Now not only am I using more of my own excess generated power but I can see how much electricity I'm using day or night. I've got the ability to change all of the settings and timings to suit my lifestyle."

Jodi Huggett, director at 4Eco, said: "We're so pleased to hear about the positive impact the immerSUN continues to have on Richard's home energy use.

"The new unit, with improved usability functions and an LED display, is more user-friendly than any other microgen heating controller on the market. It looks great, has more custom functions and, most importantly, it helps owners get even more efficiency out of their solar PV and wind systems – allowing them to use as much as 100 percent of self-generated power themselves."

BIOMASS

What: Shetland Islands Council's Port Administration Building at Sella Ness switches from oil

How: Oversized oil system replaced by 3 x Windhager BioWIN Boilers in 180kW cascade

Result: Most northerly biomass installation in the UK

Windhager UK has completed the installation of a wood pellet boiler at The Shetland Island Council's Port Administration Building at Sella Ness.

All marine operations are monitored and controlled from the Port Administration Building, which is crucial in the smooth running of council business.

The initial scheme to simply upgrade the two existing 350kW oil boilers was changed due to the efficiency and cost savings offered by a biomass solution. The oversized oil system has been replaced by a 180kW cascade system using three BioWIN boilers, which has a flexibility of heat output that suits the conditions of the Port Administration Building, where major parts of the system are switched off at times throughout the heating season.

John Simpson from the Shetland Islands Council, said: "The Council's Building and Transport Services managed this trial installation of three biomass boilers to supply the heating and hot water to buildings on the council's Port Administration site. The objective of this trial is to assess how a biomass system performs in practice, the footprint involved, and the cost benefits to the council with the advent of the RHI scheme.

"Although the system has not yet been tested in cold weather, to-date it has performed very well, and we look forward to it continuing to do so."

David Williamson of project installers Ness Engineering, added: "We believe this installation highlights the benefits of biomass from all angles. It fulfils our client's requirement to lower its carbon footprint and save money from its revenue budgets. We have provided a service to our client for many years and the working relationship we have built up has enabled our promotion of biomass to be taken seriously."

Northern star: Three of Windhager UK's BioWIN boilers have replaced oil to supply cost effective and low carbon heat to the Port Administration Building in Sella Ness, Shetland Isles

HEAT PUMPS

What: Derbyshire family replace solid fuel boiler with greener heating

How: Panasonic T-Cap 9kW Mono Bloc ASHP

Result: £100 fuel bill saving per month

A family in Sudbury, Derbyshire is benefiting from savings of up to £100 per month after Trent and Dove Housing Ltd and contractor, J Tomlinson replaced their existing solid fuel boiler with a Panasonic air source heat pump.

Trent and Dove Housing Ltd provide affordable housing for rent and part ownership across East Staffordshire and South Derbyshire. One of the housing association's aims is to supply renewable technologies to provide its tenants with more efficient, cost effective systems. It has tried and tested various options including PV, solar thermal and a number of air source heating installations.

The housing association was presented with an opportunity to provide a family in Sudbury with a more efficient heating system, and J Tomlinson specified Panasonic's T-Cap 9kW Mono Bloc ASHP.

J Tomlinson team visited the property approximately six weeks after the installation, and were delighted to find out that the tenants are already saving between £10 - £20 per week on fuel costs.

"We are very pleased with the end result," said Neil Knightsmith, contracts manager at J Tomlinson.

"The system was easy to install and is now generating great savings for the tenants. There is an evident increase in demand within the social housing sector for energy efficient and easy-to-manage heating systems. We are experienced in replacing expensive fuel or oil boilers, and providing alternative renewable heating solutions. Panasonic makes this daunting move for customers an easy adjustment. The Mono Bloc T-Cap system is compact, requiring minimum space which is often an issue in social housing."

Cash converter: Panasonic's T-Cap 9kW Mono Bloc ASHP is now saving a Derbyshire family in social housing £10-£20 per week on fuel costs, compared to solid fuel

Northern lights

Calibrate Energy has installed what it believes to be the largest privately owned solar PV system in Northern England

Hulam Farm in Durham has installed a 150kW, 460 panel Sunpower solar PV system which will achieve financial payback within six years and generate a combined revenue and savings of over £1,000,000 within 25 years.

Michael Allen, owner of Hulam Farm, was alarmed at the prospect of increasing energy bills. He also wanted long term fuel security, an end to rising energy bills and the opportunity to secure an additional income stream through the installation of the renewable energy technology.

"Installing a solar PV system on the farm was an excellent choice for us and is a perfect solution I would think for many more farmers and businesses. Importantly, it allows businesses to become sustainable, operate in a way that is far more cost effective and significantly reduces our operating costs. Not to mention that the combined savings and income is 100 percent covered by our renewables loan that Calibrate organised for us," said Michael.

"In addition, we are now much greener and the system is straight forward to run with Calibrate Energy providing very strong technical back up and support whenever we need it."

Challenges of the job included 80 percent of the work being delivered at height, 500m of new underground cables laid, over 3,000m of aluminium railing installed and more than 2,000 fixtures and fittings added.

One and only: The 150kW, 460 panel PV system at Hulam Farm, Durham is understood to be the largest privately owned system in the North

Shane McDonald, director at Calibrate Energy, said: "Hulam Farm is a great example of how a large scale solar PV system can allow a business to become more self-reliant and make huge savings on energy costs.

"It's also excellent news that projects like Hulam Farm can install renewable solutions with no money up front through a renewables loan and are receiving significant FIT payments which help spread the message that this subsidy is very much available and working."

Flying high

The installation of six **Ecodan** ASHPs into a new agricultural shed on a Gloucestershire poultry farm is helping each batch of chickens reach maximum potential growth, saving the farmer thousands of pounds a crop

The 1,620 m2 building on Stonehouse Farm near Ledbury, is being run on a 42-day programme with temperatures inside the shed accurately controlled on a linier scale from 33°C on day one, to 17°C on day 42.

Power cut: Energy consumption during the winter cycle in the poultry sheds at Stonehouse Farm, Gloucestershire, has been cut from 49,000kWh using LPG to only 4,000kWh using six Ecodan ASHPs

This enables the 40,000 birds in each crop to gain maximum weight in a controlled, comfortable environment.

The farm already has two chicken sheds, each with a capacity of 20,000 birds. On an average 42-day winter cycle, the sheds consume 7,000 litres of LPG, equating to 49,000kWh, using proportionally less as the outside ambient increases.

Ledbury-based Bavenhill Mechanics recently installed six 14kW Ecodan air source heat pump units to run underfloor heating for the new shed and the first 42-day winter cycle for 40,000 birds has used just over 4,000 kWh of electricity, on a 3-phase cycle – which equates to around £400.

The heat pump flow temperatures are reduced as the cycle advances with Bavenhill's in-house bespoke software controlling the inverter speed to match the load within the poultry house, which dramatically increases the efficiency levels of the Ecodans giving the farmer the best payback possible.

"For the existing LPG-heated sheds, energy consumption is equating to around 3.75kWh per bird, due to the increased ventilation requirements needed to reduce the CO2 and humidity levels produced by the in-house burners," said farm owner Reg Watkins.

"We estimate this will drop to below 1kWh per bird using the Ecodan system and it has already proved a much more comfortable environment for the chickens."

The farm will also be eligible for regular payments from the RHI which could see the farmer receiving an RHI payment of £11,250 per year.

Grand designs

John Felgate, **Stiebel Eltron UK** technical director, dispels the myth that renewables do not mix with commercial hot water systems

Hot water for commercial projects must be stored at 65°C to prevent the risk of legionella. Yet with renewable systems the mantra is usually "the lower the temperature, the higher the efficiency".

The high temperatures required by commercial hot water systems can therefore mean that renewables are unable to offer a suitable performance or return on investment.

But do not abandon hope! With the right products, and a little inventive thinking, there are still some spectacular savings in running costs and carbon emissions that can be achieved.

In terms of smaller projects, a typical example would be the sports club, often off the main gas grid, with a single phase electrical supply and a small budget for installation and renovation. The obvious solution is a large store of water heated by an electric immersion heater, but Stiebel Eltron has a renewable option in the WWK300 hot water heat pump that could save between a third and a quarter of the running costs of an immersion heater, and which works on a single phase electrical supply. Because this specially designed heat pump heats to 65°C, the water is sufficiently hot for safety.

An example of a larger project would be a leisure centre which tends to have a gas supply and three phase electrical supplies and larger budgets, widening the options considerably and meaning that any solution must compete on cost with a mains gas boiler.

My first suggestion for a true renewable contribution to a commercial hot water system is a solar pre-feed. This is where solar thermal panels are configured to pre-heat water for high-temperature storage, reducing the energy required from a boiler to bring it up to temperature. This has the advantage that it is both great for new build and easy to bolt on to existing systems. The slight snag with this set up is that you can only harvest energy when it is hotter on the roof than in the tank. Because water needs to be stored so hot for commercial use, this can destroy the yield from the panels, meaning it must be used in conjunction with the SBS thermal store to heat a pre-tank which then feeds the hot store.

With inventive thinking, there are some spectacular savings in running costs and carbon emissions that can be achieved

It is essential to keep an eye on the required flow rates for any showers (or rather the required rates for the thermostatic mixer valves that control the showers) being fed by this type of system. Too high a demand for flow and you lose some benefit as water will flow too fast through the pre-heat system to collect sufficient heat.

Pre-feeds heated by heat pumps, using the same approach are also possible and can work really well where a pump is also being used for space heating.

A fully renewable system is also possible and here is a solution that I have seen in operation in such contexts as a busy hairdressing salon or for up to three showers.

It starts with a hot water heat pump with a store of hot water. This supply of water is connected at point of use to Stiebel Eltron instantaneous water heaters with bare wire technology. This unique technology means that the water heaters can accept pre-heated water and regulate their own response depending on whether the water is up to the required temperature. Early in the day when the stored water is hot, it will run straight through them, without them turning on their heating element. If the tank is depleted and struggling to respond fast enough to return to temperature while demand is high at busy times, they will take on progressively more of the load.

Obstacle course: Commercial hot water systems can be problematic when incorporating renewables, but the required hot temperatures can still be achieved, says Steibel Eltron's John Felgate

Figure it out

Generation tariffs for non PV technologies

Technology	Band (kW)	Tariffs (p/kWh)
Hydro	≤15	20.57
	>15-≤100	19.20
	>100-≤500	15.18
	>500-≤2000	11.86
	>2000-≤5000	3.23
Wind	≤1.5	17.32
	>1.5-≤15	17.32
	>15-≤100	17.32
	>100-≤500	14.43
	>500-≤1500	7.83
	>1500-≤5000	3.32

(Source: OFGEM)

Number of MCS registered installers per technology

Technology type	Cumulative number	Registered April 14
Solar PV	2825	18
Biomass	319	09
Air source heat pump	888	10
Ground source heat pump	734	07
Solar thermal	1020	10
Small Wind	107	01
Total	3393	61

Number of MCS registered installations per technology

Technology type	Cumulative number	Installed Apr 14
Solar PV	543217	7537
Biomass	5259	133
Air source heat pump	28244	348
Ground source heat pump	8094	47
Solar thermal	6401	83
Small Wind	4682	06
Total	595897	8154

(Figures supplied by Gemserv)

Generation tariffs for Solar PV

Tariff band	FiT rate (p/kWh)
<4kW	14.38
>4-10kW	13.03
>10-50kW	12.13
>50-150kW	10.71
>150-250kW	10.25
>250kW-500kW	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

Tariffs apply to all eligible installations installed since 15 July 2009

Green Deal

Month	Assessments	Live GD Plans
Mar 14	25138	112
Total	188234	995

Green Deal supply chain

Month	Assessor organisations	Providers	Installers
Mar 14	12	10	92
Total	364	143	2575

(Source: DECC)

Cost comparison of heating fuels (not including RHI payments)

Fuel source	kWh provided per unit of fuel	Efficiency of system (%)	Units consumed by house (kWh)	Price per unit of fuel (£)	Units consumed per annum	Cost per annum
Heating oil (kerosene)	10 per litre	90	25300	0.55 per litre	2530 litres	£1,392
Wood pellets	4800 per tonne	94	24300	235 per tonne	5 tonnes	£1,175
Natural gas	1 per kWh	90	25300	0.042 per kWh	25300 kWh	£1,062
LPG	6.6 per litre	90	25300	0.43 per litre	3833 litres	£1,648
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	0.55 per litre	759 litres	£417
*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	0.042 per kWh	7590 kWh	£319
*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
Small biomass	Solid biomass: Municipal solid waste (inc CHP)	Less than 200 kWth	Tier 1: 8.6 Tier 2: 2.2	20
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
Large biomass	Solid biomass: Municipal solid waste (inc CHP)	1000 kWth and above	2.0	20
Small ground source	Ground source heat pumps, water-source heat pumps, deep geothermal	Less than 100 kWth	Tier 1: 8.7 Tier 2: 2.6	20
Large ground source	Ground source heat pumps, water-source heat pumps, deep geothermal	100 kWth and above	Tier 1: 8.7 Tier 2: 2.6	20
Solar thermal	Solar thermal	Less than 200 kWth	10	20
A2W heat pumps	ASHPs	All	2.5	20

(Source: OFGEM)

Green Deal cashback levels

Technology	Cashback value (£)
Solid wall insulation	£4000
Cavity wall insulation	£250
Loft insulation	£150
Condensing gas boiler	£270
Condensing oil boiler	£310
Double glazing	£650
Heating controls	£100

A full list and further details can be found onine at http://bit.ly/PPlkXv

What data would you like to see on this page?

email:

paul@andpublishing.co.uk

Who: Mark Scott, director of Greenlife Renewables

What: Greenlife Renewables is based in Sudbury, Suffolk and installs renewable heat products and air conditioning systems. Mark is a registered engineer with Specflue's UK installer and maintenance network

Business as usual

Monday: It's a 4am start with a long journey to Winchester. Today I am finishing off servicing 29 biomass boilers and commissioning them back into service for a large holiday park. The boilers are all self-contained in outdoor pods, so I set about stripping down the appliances, cleaning them, checking the configurations and re-commissioning. It's a busy day and hard work; however there are some benefits as I get to stay over in one of the luxury cabins.

Tuesday: I leave Winchester heading back home and on the way I deal with two interventions on biomass appliances. The first is a report required on an install of a 24kW biomass boiler and a buffer tank. On inspection, the design is compromised and the store is undersized causing the boiler to cycle and use more fuel. I advise the engineer and complete the report for the boiler company. My next intervention is for two boilers linked to an automated fuel delivery system. I am there to support the commissioning and setup of the appliances. After checking both boilers are correctly configured, I discuss the commissioning paperwork with the installer and head for home, finally arriving back at 7.30pm.

Wednesday: Today is a local job to install a solid fuel stove and I visit my supplier, Specflue, to pick up the flue components and ancillary parts. On arrival, we are greeted with a clear working space and a cup of tea, always a good start! The day goes well, with the stove and liner going in without any problem. I finish off with a demonstration to the customer on how to use and maintain the appliance. I also discuss the certification of the appliance and using the correct fuel. I leave a satisfied customer sitting in front of their new log burning stove. I am home early and do some invoicing and catch up on quotes.

Thursday: Today I'm servicing a biomass boiler and I visit Specflue to pick up my components. On arrival, I get on with stripping down the appliance. It quickly becomes apparent that the cleaning regime has not been kept to. I remove the turbulators, fan, ash trays and brazier for visual inspection. I show the customer the impact of a poor cleaning regime and explain to him once again how to clean the boiler thoroughly. I build the boiler back up with new seals and gaskets and then, using the 'boot loader' supplied by Specflue, I upload new software to the boiler, ensuring continued efficiency. The job has taken longer than anticipated, so I call it a day and head for home.

Friday: Today is set aside for quotations and site surveys. I meet the customers on site to discuss and go over the information I need to produce a detailed quote pack in line with MCS. I have three quotes and surveys covering Suffolk and Norfolk and in between, I am taking calls and booking up my diary for the next 3-5 weeks. I arrive home at 4pm and start work on the quotes. I contact suppliers for prices and lead times, design the systems and compile the schedule of works. I finish my day by emailing the quote packs over to the customers for their consideration.

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