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5th anniversary issue

2013 Solar Energy UK preview

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Don't look back in anger

It was with mixed reactions that I leafed through the first edition of REI whilst I pondered what to write in this column marking the magazine's fifth anniversary.

At first glance, I was struck by the remarkable parity between what was current and topical in September 2008, and the subject matter we cover at the present time.

For instance, then editor Lu Rahman referred to the industry being 'entrenched in the doom and gloom of a global recession' – a status quo from which we are yet to fully emerge.

On the other hand, these were still the days of Clear Skies and when Green Deal, FiTs and the RHI were merely conceptual terms yet to enter modern parlance. How far we've come.

Some of us may feel a little less prosaic about the journey we've been on over the years, I suspect, with badly handled cuts to the Feed-in Tariff, seemingly random government intervention and endless delays to the domestic RHI all taking their inevitable toll on the viability of some businesses.

It hasn't been easy, but all of you reading this can still proudly boast to be part of the most dynamic and exciting industry on the planet. We are the future. With the relentless rise in the cost of fossil fuels, and their diminishing availability, our business case only grows stronger.

The parameters of the industry continue to shift and the ride is still bumpy, but microgeneration remains a fascinating business right at the cutting edge of technology.

With the Energy Efficiency Exhibitions touring the UK this month, it is an exciting time to be involved and absorb all this industry has to offer. For anybody who hasn't already, I encourage you to register for your free ticket at one of six UK venues at **http://energyefficiencyexhibitions.co.uk/register/**

And finally, my thanks go to all of our readers and advertising partners who have continued to support this publication throughout the last five years.

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‘The Green Deal has received a lot of bad press recently; some deserved and some based on misconceptions” Ian Feeley, PK Group p34

Domestic RHI announcement receives warm reception

Leaders in the renewables industry have widely welcomed The Department of Energy and Climate Change’s (DECC) confirmation of the financial support which will be available to homeowners under the domestic RHI from next spring.

Following the conclusion of a final consultation on tariff levels, DECC confirmed in mid-July that:

- Tariff levels will be set at 7.3p/kWh for air source heat pumps; 12.2p/kWh for biomass boilers; 18.8p/kWh for ground source heat pumps and at least 19.2 p/kWh for solar thermal
- Payments will be made on a quarterly basis for seven years to anyone who has installed an eligible technology after 15 July 2009 (based on predicted cost of 20 years heat generation)
- Householders who have received RHPP vouchers will have the amount deducted from RHI payments
- DECC remains committed to introducing the scheme in spring 2014
- Applicants will need to complete a Green Deal assessment and meet minimum energy efficiency requirements to qualify for RHI payments
- The scheme will be open to homeowners, private and social landlords, third party heating system owners and self-builders

In response to the details for the scheme, **Ice Energy Technologies** managing director, Andrew Sheldon, said “This is exactly the news we were hoping for. The fact that we now have an incentive scheme which aims to repay the installation costs with hopefully a little bit extra on top, should result in millions of people across the UK benefitting from cleaner technology for years to come.”

Tim Minett, chief executive of biomass suppliers **CPL Industries**, said: “We have been waiting a long time for these figures which bring much-needed clarity and should provide real impetus to the scheme. Homeowners can now commit with certainty to a renewable heating system.”

“Today’s news is just what the industry has been waiting for,” said Phil Hurley, managing director at **NIBE**. “After numerous delays and uncertainty surrounding the scheme, DECC’s announcement has been a welcome injection of confidence and clarity.”

Meanwhile, **Plumb Center**‘s head of sustainability, Tim Pollard, added: “This latest news on the domestic RHI is fantastic. It’s been a long time coming, but the tariffs are encouraging and it’s a big step in the right direction; this is a great start to the longer journey.

Doubling up: Tim Pollard, Plumb Center, strongly advocates linking the domestic RHI with the Green Deal

“The link between the RHI and Green Deal is exciting. There’s no point fitting renewables (or any heating system) in homes that are poorly insulated because the heat will just escape out of the walls or the ceiling, so I’m happy a Green Deal assessment and minimum insulation requirements are needed.”

Adrian Troop, **Nu-Heat** sales director, said: “The industry has been waiting a long time for these figures and the announcement made by DECC is not only what we wanted to hear but necessary, also.

“Homeowners that had put their plans to invest on hold and those now interested in heat pumps and/or solar thermal now have clarity on tariff rates and a clear financial incentive to commit to the installation of a renewable heating system.”

NFU urges PV installers to reap the harvest

Solar PV installers can look forward to a bright future by servicing demand in the rapidly growing agricultural market, says Jonathan Scurlock, chief advisor on renewable energy and climate change to the National Farmers' Union (NFU).

Speaking at The Solar Future UK' 13 Conference at Westminster Central Hall, London, on July 16, Mr Scurlock said: "The outlook for PV in farming is quite optimistic and a growth area for installers. Driven by the Feed-In Tariff and then the Renewables Obligation, it will continue to appeal due to the attractive draft prices in the Contracts for Difference.

"Food processors worldwide have a long history of using solar energy for growing and drying crops – so PV is just the latest twist. It is not seen as competition to agriculture but something which can be integrated very closely.

"A 50kW roof mounted system is now well within the reach of a farmer's own means (£50k-£60k) whilst a 1MW ground mounted system is within the reach of secured loan financing (£750k-£1m) by using a farm as collateral. Returns are likely to be 5.8 per cent by 2020 before government subsidy as we get nearer to grid parity."

He added: "With over 220MW already installed in the last three years alone, I believe there is potential to have 3GW of PV installed on agricultural land by the end of the decade."

Pole position: UFW has secured exclusive UK distribution rights for the EC Wind 55kW turbine

UFW launches wind division

UFW has become the sole UK distributor of the EC Wind 55kW turbine, manufactured in Sweden.

The Leicester-based company, which already offers a wide range of renewable technologies, made the decision to move into the wind market following the careful selection of a reputable turbine manufacturer and model.

"UFW has been looking at doing this for a while," said David Taylor, UFW's business development manager.

"We've done due diligence on a number of manufacturers and scoured the globe looking for a high quality turbine model.

"We're very happy with EC Wind's products and confident we can add value to the market place."

The company says that, such is its confidence in the quality and high performance of the turbine model, it is offering a seven year warranty plus a performance guarantee on the first 20 models sold.

Mr Taylor added: "A number of projects are now in planning and we've seen a good level of uptake so far.

"The EC Wind 55kW is the highest performing product of its size and, in most cases, a return on investment can be realised within the warranty period.

"The first installs should be completed by the end of the year and we have a solid pipeline of projects already in planning."

Events

The Energy Efficiency Exhibitions
10 September, South West
12 September, Midlands
17 September, North East
19 September, Scotland
24 September, South East
26 September, North West
www.energyefficiencyexhibitions.co.uk

The Renewables Event
10-11 September NEC, Birmingham
www.therenewablesevent.com

The Energy Event
10-11 September NEC, Birmingham
www.theenergyevent.com/

Solar Energy UK
8-10 October NEC, Birmingham
http://uk.solarenergyevents.com

Energy Solutions
9-10 October London Olympia
www.energysolutionsexpo.co.uk

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

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

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

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

Solution found in China PV tariff dispute

The imposition of large anti-dumping tariffs on Chinese PV products imported to the EU looks to have been averted after the European Commission endorsed a minimum pricing offer from Chinese manufacturers.

Tariffs set at an average level of 47 percent looked certain to be applied in August after an investigation by the commission found that Chinese manufacturers had used anti-competitive practices by 'dumping' panels in Europe at below cost prices.

As a result of this new arrangement, Chinese companies participating in the minimum pricing undertaking will be exempted from any tariffs whilst those which are not, will be subjected to the tariff levels originally announced in June.

In a statement made on 27 July, EU trade commissioner, Karel De Gucht, said: "After weeks of intensive talks, I can announce today that I am satisfied with the offer of a price undertaking submitted by China's solar panel exporters. This is the amicable solution that both the EU and China were looking for.

"We are confident that this price undertaking will stabilise the European solar panel market and will remove the injury that the dumping practices have caused to the European industry.

"Upon consultation of the advisory committee composed of member states, I intend to table this offer for approval by the European Commission."

Heat pump conference focuses on RHI

This year's Ground Source Heat Pump Association (GSHPA) summer conference focused heavily on the Renewable Heat Incentive and its impact on the sector.

Over 70 installers and other stakeholders gathered at The Manchester College in Wythenshawe on July 17 to listen to speakers from The Department of Energy and Climate Change (DECC) and take part in a lively question and answer session.

Keynote speaker Steve Martin, DECC's director of heat and industry, began proceedings with an update on both the domestic and non-domestic strands of the scheme.

He said: "Quite a lot has happened since I last spoke at a GSHPA event in March. Take up for some technologies in the non-domestic RHI has been lower than expected so in May we set out proposals for changes to some tariffs, including a significant increase in the GSHP rate. The timetable is to announce our conclusions in the autumn and implement any changes next spring."

He added: "The recent announcement on the domestic RHI was the outcome of detailed policy work and the consideration of differing views on how the scheme should work. But, there is still a lot of work to do to put it into practice. We look forward to continuing to work together with industry and bodies such as the GSHPA to make sure the policy is implemented effectively."

Reaching out: DECC's head of heat and industry, Steve Martin, provided updates on the RHI

Patrick Allcorn, head of household schemes at DECC, used his speech to reach out to installers who will lead the rollout of the domestic RHI when it goes live next year. DECC is keen to provide more information to installers and apply strong consumer protection measures in order to reduce the possibility of unethical sales techniques undermining the scheme's appeal.

He said: "The whole scheme is dependant on the reputation of the boom which will initially follow its introduction. Newspapers will focus on the one or two installs which fail so we need to make sure we can counter that with a large body of high standard work.

"The key thing for us is to work with installers to ensure they know about the RHI, what the offer is, and that they have the skills to sell it properly. Miss-selling is probably the biggest risk we face in the initial stages.

"The best route to market is the installer on the doorstep talking about the scheme so those are the people we want to influence."

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Energy Efficiency Exhibitions – arriving in a town near you

With the winter months only a few weeks away, it's time to visit this month's Energy Efficiency Exhibitions, says organiser **Dan Caesar**

'Ecobuild on wheels' is back and the award-winning shows are travelling the length and breadth of Britain to bring your business invaluable information on ECO, Green Deal, RHI and much more.

Whether it's the wintery weather forecast, or the bleak economic outlook, the business climate for the UK's construction and energy sectors continues to change. With utilities bills for commercial and domestic consumers rocketing, keeping current on the latest legislation and subsidies has never been more critical. The Energy Efficiency Exhibitions are the only shows devoted to delivering energy efficient solutions in an easy-to-digest educational programme.

So, whether you're keeping an eye on energy monitoring, insulating against future costs through a fabric first approach, or optimising output of high efficiency heating systems, join us at the Energy Efficiency Exhibitions for all the answers. With hundreds of thousands of pounds worth of advice on offer, it is an invaluable experience and as tickets are subsidised by an exceptional list of exhibitors, your business does not need to pay to profit.

This year's shows have an unprecedented variety of visitor attractions on offer to tackle every technology and simplify every subject you need to know about. The educational programme, delivered by industry experts, will be hosted in a series of presentation and demonstration areas, including: the Commercial Theatre, the Green Deal Theatre and the RHI Theatre; plus Hands-on Heat Pumps, the Energy Efficiency Demo-Station, and the Renewables Demo-Station.

The Energy Efficiency Exhibitions also offer a showcase of suppliers that is second to none. A small selection of the best-known brands on board include: Adey, Baxi, Gas Safe Register, GE, Glow-worm, Graham, Knauf Insulation, NAPIT, Natwest, NICEIC, Plumb Center, PTS, Rexel, Vaillant, Viessmann & Worcester.

What's more with the shows' unique, regional format, wherever you are, from Edinburgh to Exeter, there is an Energy Efficiency Exhibition en route to you this September.

For FREE tickets, to a venue near you, visit **www.energyefficiencyexhibitions.co.uk**

Making tracks: Three new venues in Newcastle, Edinburgh and Surrey have been added to the 2013 Energy Efficiency Exhibitions line up

Top performance: The Renewable Heat Incentive Theatre is just one of several demonstration and presentation areas at this year's shows

Venues:			
Returning to	South-West	10th September	Westpoint Arena, Exeter
Returning to	Midlands	12th September	Ricoh Arena, Coventry
NEW for 2013	North-East	17th September	Metro Arena, Newcastle
NEW for 2013	Scotland	19th September	Highland Centre, Edinburgh
NEW for 2013	South-East	24th September	Sandown Park, Surrey
Returning to	North-West	26th September	Event City, Manchester


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renewable energy
www.dulasmhh.co.uk

Farming's new cash crop

Agriculture presents a rapidly growing marketplace for renewable energy installers as the number of finance options continues to increase, explains **Sean Mcdonald**, renewables finance manager at Nationwide Corporate Finance

The renewable energy sector offers plenty of appeal to farmers wishing to grow additional revenue streams, cut their operating costs and ensure security of supply.

Attractive financing options

Many farming businesses will prefer to take financing for their asset purchases, rather than risk jeopardising their cash position. The agricultural industry is notorious for its fluctuating fortunes, with unexpected factors such as bad weather, crop diseases and even changing customer patterns having an impact on business. A great summer can lead to a bumper crop and plenty of cash to spare, but the opposite situation has occurred in the past eighteen months and most farmers are keen to preserve their financial reserves, particularly to cushion any further blows. Farmers know that with the right finance, they can acquire the equipment and assets required to grow or run the business whilst leaving a vital cash reserve in the bank.

Suppliers can often sell their equipment to farmers more successfully on the basis of low monthly payments. As with many industries, the certainty of an affordable monthly fee is far more acceptable than a single capital cost.

Marketing the scheme

There is a range of reasons for farmers to invest in renewable energy and each farm business will have its own particular set of drivers. However, to effectively attract new customers, they need to get across some key messages.

Renewable energy helps to reduce the agricultural business's costs by lowering the amount they'll pay for lighting, heating and machinery, for example. Depending on the technology chosen, farmers can choose to store excess energy in batteries to reduce their reliance on suppliers and ensure energy security or receive an income from feeding the extra energy into the national grid. Payments are received via the government's feed-in tariff.

A renewable installation will allow that farm to fix their energy costs over the medium to longer term. Farmers can also benefit from a potential new source of income, which could be a considerable one. Renewable energy installations provide an excellent return on investment over the long term.

The technologies also allow farmers to reduce the level of their carbon footprint and market their environmental credentials. This is hugely important to agricultural businesses which are seeking to do well in the lucrative 'ethical farming' or organic markets

Working with the right provider

If an installer can link up with the right financial advisor, it will greatly help their business to be able to provide a full customer offer. A good financial provider for the agricultural industry will really know the sector inside out and be able to demonstrate significant knowledge and expertise. The lender can provide funds secured against existing farm assets, such as machinery, so that the farmer's home isn't necessarily needed to provide security. Charges are not put against property.

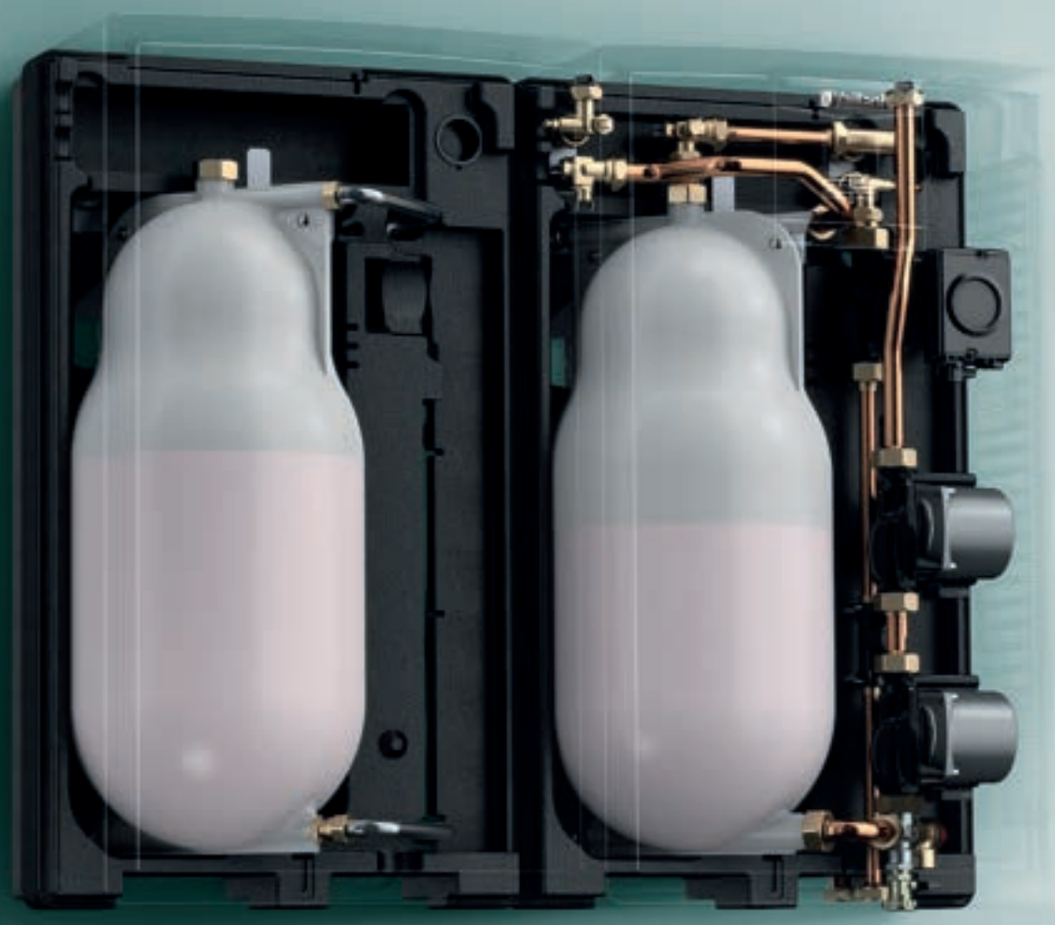
A good financial provider will also offer 100 per cent finance and some of the most attractive rates on the market. Other key selling points include a high acceptance rate and rapid transfer of funds ideally within 48 hours. These specialist financial providers really understand the challenges and opportunities of the farming industry and work hard to support the farming community and help it thrive. They offer a level of service, access to finance and specialist support that most high-street banks will not provide.

Low-rate loans are available for a range of purposes, including investment in renewables and for farmers seeking additional or new income streams.

Harvest festival: Linking with the right financial advisor is important for installers looking to make gains in the agricultural sector, says Sean Mcdonald, renewables finance manager at Nationwide Corporate Finance

Why Vaillant?

Because our new drainback system lets you maximise solar gain.



Vaillant has always been right at the forefront of development within the heating industry.

Now, with our new solar drainback system, auroFLOW plus, Vaillant is once again showing why its advanced heating technology is never static for long.

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Partner organisation MCS presents its regular column for REI

Wind of change

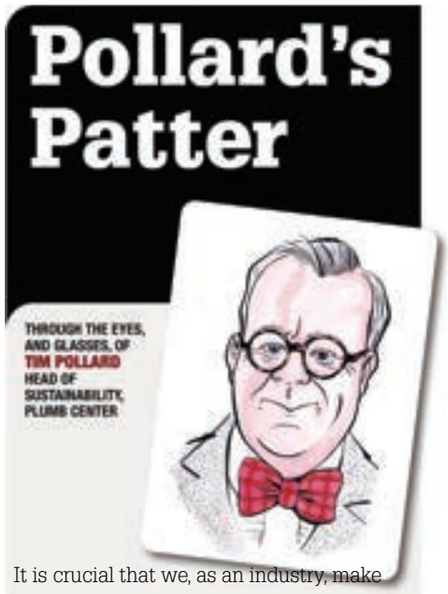
This month, the MCS turns its attention to major revisions to international wind standards

Over the past four years, the International Electrotechnical Commission (IEC) has been undertaking a major revision to IEC 61400-2. The 61400 is a set of design requirements made to ensure that wind turbines are appropriately engineered against damage from hazards within the planned lifetime. The standard concerns most aspects of the product life; with the 61400-2 referring specifically to the safety philosophy, quality assurance, and engineering integrity and specifies requirements for the safety of Small Wind Turbines (SWTs). This includes the design, installation, maintenance and operation under specified external conditions.

The four year long modification process has gone through the IEC committees, which include over 40 representatives of global small wind manufacturers and Certification Bodies. The revision has incorporated many of the lessons learnt as a consequence of operating the MCS/BWEA scheme and standards.

The corresponding MCS document (MCS 006) has been updated and will be published at the same time as IEC 61400-2. The most substantial change to MCS 006 will be the scope. Previously the scope was limited to 50kW with a swept area of 200m2. Once the new standard is published the limitation of 200m2 will be removed in order to provide clarity around the different boundaries and bring it in line with the international standard. This has been done by allowing certification either via the Renewable UK (RUK) standard (i.e. reliant on the IEC 61400-2 small wind standard), or via IEC 61400-1 (the large wind standard, which has no lower limit) plus adding in the other requirements of the RUK and IEC 61400-2 standards (e.g. requiring acoustic and power performance testing, giving guidance on variants, etc).

Alongside the imminent updates to the small wind standards, MCS has recently started to develop a medium wind standard which will be based on the underlying IEC 61400 standards. The majority of the work to date has been completed by a sub group of the IEC TC 88 (MT01). MCS will look to incorporate this work into a formal MCS standard in the near future. The scope of the medium wind standard will cover turbines from 100kW-500kW in size. A suggested implementation date for this new standard is spring 2014.



It is crucial that we, as an industry, make the domestic RHI a thumping success and that means all the stakeholders working together, to achieve efficient and economic installations to the delight of consumers.

We must show the minister and DECC that they were right to back us in an approach which will help to reduce carbon emissions and demonstrate just how effective renewable technologies can be in providing comfort with reduced impact. We must demand innovation from our manufacturing partners, be scrupulous in the application of standards, be unerringly careful in design and sizing and unrelenting in our honesty regarding the suitability of properties.

Here at Plumb Center, we will be revealing our own strategy for our customers, building on the remarkable success of our nine training centres and 20+ renewables showrooms. We offer fully accredited training in all the renewable technologies and allied skills. We provide access to MCS accreditation through our certification partners. We even provide training to become Green Deal Assessors.

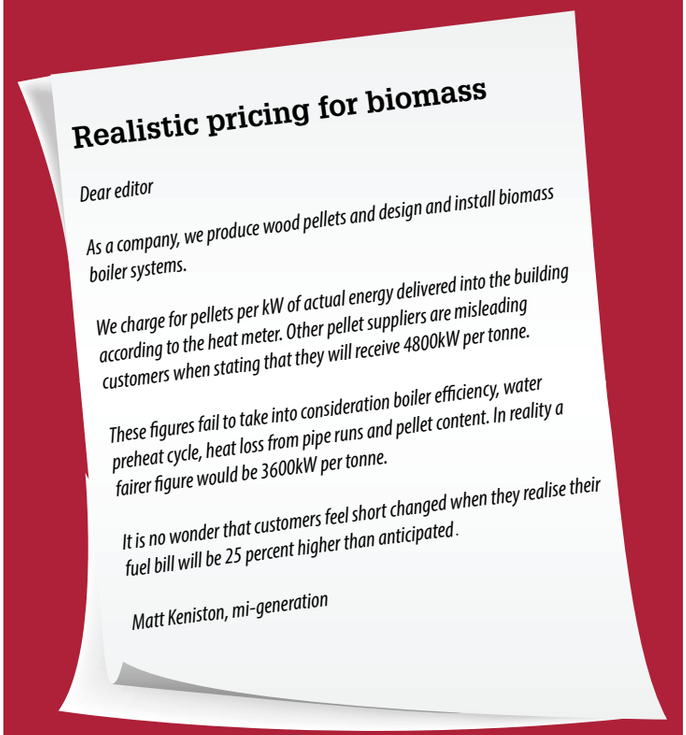
But our strategy will be much broader and deeper than this, including some real service innovations which will redefine our role as supply partner of choice.

You will begin to see the evidence of these developments as the year draws on through conventional and unconventional sources. As ever, we will be striving to ensure that ALL our customers will be able to benefit from new opportunities.

You know it makes sense.

Letters to the editor

REI editor Paul Stephen invites readers to send in their views with the best letters being published on this page each month.
To submit your letter, please email paul@andpublishing.co.uk a maximum of 300 words with Letter for the editor as the subject. All letters may be edited for style and length.



Realistic pricing for biomass

Dear editor

As a company, we produce wood pellets and design and install biomass boiler systems.

We charge for pellets per kW of actual energy delivered into the building according to the heat meter. Other pellet suppliers are misleading customers when stating that they will receive 4800kW per tonne.

These figures fail to take into consideration boiler efficiency, water preheat cycle, heat loss from pipe runs and pellet content. In reality a fairer figure would be 3600kW per tonne.

It is no wonder that customers feel short changed when they realise their fuel bill will be 25 percent higher than anticipated.

Matt Keniston, mi-generation

Renewables in 140 characters

REI scours the Twittersphere for some of this summers's best tweets.

Don't forget to follow us @REI_digital

@howardjohns
#solar generates 6% of daytime electricity in the UK on Tuesday. Beats #fracking any day!
(Howard Johns, Southern Solar 26/7/13)

@3WhitehallPlace
Do you live in Scotland or the North? Concerned about rising energy bills? Then why not consider moving to a warmer part of the UK?
(DECC spoof account 28/5/13)

@everlastingpr
Not many good days in renewables. But today was great #rhi
(Babak Daemi, Everlasting PR 12/7/13)

@REI_digital
A big shout out to all @REI_digital followers as we pass the 1,500 mark!!!
(REI Magazine 11/7/13)

CURRENT AFAIRS

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

Many renewable energy contractors have struggled in recent years, due to the difficult combination of recession and low consumer confidence sparked by cuts to the Feed-in Tariff. However, PV systems still offer a compelling rate of return for clients and an ongoing opportunity for electrical contractors. Despite the recent FiT degression, the lower price of PV cells and associated equipment mean the rate of return for clients can still be around 6-8 percent – tax free. What other current investment can give this rate of return? The recent spat between the EU and China over the price of PV cells appears to be resolved, with China agreeing to a minimum cost of cells. However there are many other suppliers of PV cells other than China and the price could still fall further. In addition to the domestic market, there has also been renewed interest in large scale PV installations, so the future for PV still looks good.

But there is, of course, more to renewables than PV. The coming of domestic RHI tariffs in 2014 and the increase in non-domestic tariffs are also boosting customer interest in heat pumps and biomass systems. Heat pumps offer a compelling alternative system to oil or off gas grid heating systems and their installation involves a significant amount of electrical work. In addition to stand-alone renewables installation, the Green Deal has been set up to provide part funding for the installation of PV and renewable heating. All this means that many electrical contractors will be looking a lot wider than PV for their future order book.

TECH TALKING

Heat pumps & lifestyles

Heat pump trouble shooter **Bob Long** asks: Is your new heat pump installation costing you more to run than you thought it would?

When deciding upon a heat pump system, an all important factor in the system design is to understand the lifestyle of the occupants.

For example, a heating system designed to provide for a young family at home all day, or perhaps elderly occupants requiring constant and stable warmth, is going to be quite different when compared to the needs of a career family, out at work for most of the day and requiring heating for only a couple of hours in the morning and in the evening.

Many heat pump system designers will assume the property is to be heated almost continuously, with maybe a few hours 'off' during sleeping-hours.

Long consistent periods of heating will ensure the building fabrics all become warmed by the relentless heating regime, and a stable temperature becomes easy to maintain by using the actual building fabric as a stabilising heat sink.

This heating strategy is ideal for dwellings with a high occupancy ratio, but not for a dwelling with low occupancy outside sleeping hours.

No matter how efficient the thermal integrity of a dwelling, there is no economic or green merit in heating an unoccupied home.

Conventional, fossil fuelled heating systems generally give greater flexibility, through their ability to dispense large amounts of energy quickly, simply by increasing the radiator surface temperature, to around 70°C, or even higher.

High radiator temperatures can rapidly warm the air temperature inside the dwelling, without completely warming the construction fabrics, which is a more acceptable heating strategy for homes with a low number of hour's occupancy.

Heat pump systems cannot produce the high temperatures associated with fossil fuel boilers, therefore the system design and equipment selection for a home where low occupancy hours are anticipated, will be significantly different to the heating requirements for high occupancy hours.

A home requiring rapid heat input for a short number of hours will need a much larger thermal store, a high capacity heat pump and high output emitters, although the kW/hours of energy consumed are likely to be less than a continuous heating alternative.

Heat load calculations based upon lifestyle needs must consider: – the volume of air within a specific living space, specific heat and mass of the building fabrics (within the insulated volume), and the required ramp-up time to the desired air temperature.

By considering all the above parameters at the design stage of the project, a heat pump will provide the answer to economical heating for all lifestyle applications.

Top tips for electrical contractors that can't be learnt in a training centre, by Trade Skills 4 U

1. **Payment:** It takes a lot longer to get paid when you work for yourself than for someone else.

2. **Expectations:** Never lie to a customer and don't be afraid of telling your customer you cannot fit their job in for a while.

3. **Rates:** Being the lowest priced company around is a bad idea. Price realistically.

4. **Advertising:** It is worth looking into effective advertising rather than jumping on board with the first advertising caller.

5. **Training:** Teaches you the general way of doing most things but gaining experience with another electrician is the best way of gaining essential experience.

6. **Regulations:** There are always 'reg rumours' on site but if you work in accordance to the regulation guidelines you won't go far wrong.

7. **Registration:** Get registered with a governing body or it will be difficult finding work.

8. **Quotations:** It is much better to wait and work out a final price rather than giving an initial guess.

9. **Networking Groups:** Ensure it has a strong representation from other trades.

10. **Work wear:** Look after yourself in the workplace.

Q&A

DAVID BASSIE

Mastervolt

REI: What have you got planned for the rest of 2013?
We will complete the field test of our brand new residential storage system and have it certified so that we can put it on sale. The system is based on our tried-and-tested marine combi range, of which more than 10,000 units are already in operation. It contains our own Li-ion battery with an integrated battery management system and is able to be retrofitted to existing solar plants without the need for the inverter to be replaced. We are also completing our SunMaster ES series with a 2.2 kW and 3 kW models.

REI: What do you see as growth areas for renewables?
We are seeing a greater need for small inverters because people want to generate their own power for their own personal use in order to be independent of the government, large energy companies and unstable subsidies. This is why we are also witnessing growth in residential storage. People want to be in control of their own energy. In the past, energy was not something that consumers made active and conscious decisions about, but it is now increasingly becoming a consumer-focused product.

REI: How is your company cutting its carbon footprint?
All of Mastervolt's new products are manufactured in Holland, minimising CO_2 emissions from transportation. The company's production facilities are ISO 14001 certified and its environmental management system ensures that a continuous improvement process is in place to reduce its effects on the environment, including its CO_2 emissions.

David Bassie is product manager solar at Mastervolt

The generation game

Steve Pester, BRE, looks at how energy storage is rapidly growing in importance and how we can harness this fledgling technology

With government predictions of electricity prices hitting 19p per unit by 2020, the rewards for using any electricity that has been generated on site can only increase. As mentioned in a previous article, 'storage' is the latest buzz word. At a domestic level, that generally means batteries, perhaps also with a little heat storage in the hot water cylinder.

In Europe, and increasingly in the UK, the term 'self-consumption' is the next buzz word to learn after storage. This has nothing to do with 'consumption' as the Victorians would have known it, but everything to do with becoming a little more independent from the utility companies.

The claims are that when used with an intermittent energy source such as PV or wind turbines, battery systems can increase the self-consumption of a household (that is the amount of on-site generated electricity that is consumed on site, rather than being exported to the grid) from about 30 up to 60 per cent. These figures, whilst not unreasonable, depend, of course, on a number of factors such as usage patterns, battery bank size, micro-generator size, etc.

Whatever the exact figures, the technology will most likely induce both excitement and fear. It's an exciting prospect for early adopters, people keen to become as independent as possible from the utility companies and for battery manufacturers, for obvious reasons; but also for the Distribution Network Operator companies (DNOs) and National Grid. If deployed in large numbers, local storage could be a very useful tool in helping to balance the supply and load on the grid and in reducing the peaks in demand. One can imagine that the electricity suppliers might be a little more uncomfortable with the prospect of people being able to supply more of their own power.

Either way, there is the usual danger of a quickly developing, unregulated market springing up with every man & his dog becoming overnight storage experts. With this is mind, the BRE National Solar Centre will be looking at storage technologies in due course and will provide some level-headed guidance. If implemented carefully, we think there is a very strong future for microgeneration/storage combinations – with prices dropping fast, it will knock down the final argument of the renewable energy critics. **www.bre.co.uk/nsc**

Adding biomass to your installer skills

With domestic RHI tariffs confirmed, now is the time for installers to make sure they have the right skills and qualifications to take advantage of new business opportunities, says **Robert Burke**, HETAS

Now that the government has confirmed tariffs for the domestic Renewable Heat Incentive (RHI), the industry can start to move forward and make plans for when the RHI is introduced next year.

From spring 2014 householders could receive hundreds of pounds a year for using biomass boilers, solar thermal panels or heat pumps. The tariff levels for biomass boilers have been set at 12.2p/kWh, and households will be paid on a quarterly basis for seven years based on the estimated heat demand of the property. A Green Deal assessment is required, and installers must be MCS certified or equivalent.

Around 90 per cent of funding from the commercial version of the RHI has gone to biomass, so it's likely that the domestic version could provide a very significant boost for the industry when it's introduced.

For householders biomass offers an environmentally friendly option, and the RHI payments will make it an attractive choice for anyone who wants to install a new or replacement heating system. Because of the size of biomass installations it's likely that most of these will be in rural areas, and for installers working in off-gas areas adding biomass to their heating skills is a natural progression. If you're already working as a heating engineer, then you'll already have many of the necessary skills.

Since HETAS introduced a biomass training course in 2009, demand has steadily increased in line with the demand for biomass installations. HETAS offers two straightforward routes to becoming a biomass installer, depending on your previous experience. The H005 course is aimed at heating engineers who already work dry and wet stoves and have existing HETAS qualifications. However, there is also a direct entry route aimed at gas and oil heating engineers who want to install biomass systems. The H005BR version of the biomass course is one day longer than the standard H005 four day course, and covers building regulations, legislation and standards in addition to the standard course content.

Both versions of the HETAS biomass training course cover appliances up to 45kW, but the same theory applies for installations up to 100kW including log, pellet and wood chip appliances. With a mix of theory and practical elements the course enables installers to carry out feasibility studies, and to professionally advise their customers on fuel type, storage options and system design. It also covers marketing and details how to access the various grants available for biomass systems under the RHI.

HETAS biomass assessments are the only ones mapped against National Occupational Standards, and courses are run through a nationwide network of HETAS approved training centres, some of which are approved with the National Skills Academy for Environmental Technologies. With a successful assessment, installers can register as an approved biomass installer on the HETAS competent persons scheme. The course can also be used as part of the criteria for approval with HETAS as an approved Microgeneration Certification Scheme (MCS) installer for biomass – which is important as installers need to be MCS approved to access RHI grants for their customers.

Home advantage: Robert Burke, HETAS, says that with 90 per cent of funding from the commercial version of the RHI going to biomass, it's likely that the domestic scheme will provide a similarly significant boost to installers

Becoming a biomass installer will mean you'll be ideally placed to take advantage of a growing market which will have even more potential from next year. For more information on the training and registration schemes available with HETAS visit **www.hetas.co.uk**, contact **info@hetas.co.uk** or call 0845 634 5626.

Two minutes with . . .

Who are you?
Steve Goodwin, ceo at Sentinel Performance Solutions

What do you do?
I head up the organisation and run the business day to day. I work closely with an excellent team both in the UK and internationally.

Where are you?
We're based in Runcorn in Cheshire and have teams in Europe and the USA.

How's business at the moment?
We are pleased to have grown the business through the difficult market conditions in the last two years. We expanded our offer to give us complete solutions to our customers' water treatment needs.

How could it be better?
In common with other suppliers we have been frustrated at the slow uptake of Green Deal and ECO. The delay in introducing the RHI has impacted on our performance in the renewables category. The benefits of water treatment are still a well kept secret so there is still a great opportunity if we can get the message more effectively to installers and in turn to householders.

What's the best business advice you have received?
My first ever boss at SC Johnson persuaded me that the old fashioned sales approach – 'gift of the gab' stuff – was old hat and there was a professional, intelligent way to sell. I've been glad of his advice as I've moved into marketing and general management and incorporated many of his ideas into the way I operate.

How are you going green?
We have sustainability at the heart of everything we do from sales force incentives to drive low emission vehicles through to lobbying government organisations to support our efforts to educate the market on the sustainability benefits of water treatment.

Talking point

Liz MacFarlane, Zenex Solar, reveals how working within the industry has impacted on all aspects of her life

Like many of you, I took a leap of faith to move into this industry. Leaving a successful career in pharmaceuticals, my motivation at the time wasn't anything to do with the environment.

Early on I presented alongside Andrej Miller (DECC) and environmentalist Huw Goulbourne. Andrej and I spoke about the opportunities of FITs and RHI while Huw concentrated on carbon. My final words were that whatever the initial motivation for renewables, the end result is the same and that those who make the move will inevitably become more environmentally aware in other areas of their life. It was happening to me.

Day job: Liz MacFarlane gives a new meaning to taking her work home with her

At work we installed a 50ft green wall, bought a hybrid car, fitted air source heating and a PV array. At home we recycle everything, installed a solar system, turned down the heating, sold the gas-guzzling V8 and my son plans to study engineering so that he can impact on a sustainable infrastructure. My career move had a much bigger impact than I could've imagined.

So, the lesson of the month and certainly for me of late, is never judge a book by its cover. Even the first chapter can be misleading.

I get the same kind of buzz when I drive past the college where a customer installed a JA Solar system as I did in pharmaceuticals when a doctor told me they'd had the first Viagra baby (yes, I won awards for my Viagra sales!).

We're busy preparing for the Energy Efficiency Exhibitions during which I'll be touring the country with Zenex. Don't expect any Viagra samples but come along and see us never-the-less. This year's events boast attractions such as 'Hands-on Heat Pumps' and showcases some of the industry's best. For FREE registration at any one of the six nationwide venues, go to **www.EnergyEfficiencyExhibitions.co.uk**

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Success story

Why do your competitors seem to be doing so well against the odds? **Jason Hobbins** of EnergyMyWay explains how joining a franchise may boost your business

It's tough out there and for many of us in the renewable energy industry, and solar PV in particular, this means we need to think hard about how to secure a healthy, profitable future for our businesses. Times when providing an excellent product and good customer service were enough to keep profits high have passed. To succeed in today's market, private business owners need to be better at marketing, selling, negotiating terms, building trust and staying at the cutting edge of product and industry development. Not easy when you operate a small business with limited resources.

The answer could lie in becoming a franchisee of a larger, credible brand where you can benefit from all the additional skills and resources you need to accelerate your business, without taking on additional overhead.

As a franchisee, you still own 100 per cent of your business but it is now part of a trusted brand, which ultimately holds greater credibility with your customers. As a result, you have a far greater chance of success.

Franchising works because there are mutual benefits for both the franchisee and the franchisor. A small percentage of the franchisee's turnover is passed to the central franchisor, as a 'management service fee'. Because this revenue is based on your performance, it gives the central company a genuine interest in the success of each franchisee. In exchange for your management service fee, a team of experts will support your business; you will have the buying power of a larger group and a proven marketing and sales system to win customers.

We advise everyone to talk to several franchise companies before deciding which one is for you

In a recent survey by Natwest and The British Franchise Association, 81 per cent of franchise business owners said they feel being part of a franchise gives them a competitive advantage. Peter Vyvyan Robinson, owner of an EnergyMyWay franchise in Bristol and the South West, noticed the benefits straight away.

He said: "The brand works extremely well and imparts a professional feel to everything we do: it is not just a logo but a whole culture of the way we do things and the values we subscribe to. Customers will pay more for a brand of this credibility; we don't need to be the cheapest to secure the business. We have found that being part of a national network of similar businesses, we can access for ideas and experiences, has been important for accelerating us to becoming profitable and successful."

Joining forces: Independent renewable energy installers could benefit from becoming a franchisee in a larger more credible brand, says Jason Hobbins of EnergyMyWay

So what should you do if you are interested in a renewable energy franchise? We recommend you do you do your research. We advise everyone to talk to several franchise companies before deciding which one, if any, is suitable for you. Franchise businesses tend to operate slightly differently from one another, so it's worth weighing up the pros and cons of each model. The British Franchising Association (BFA) is the recognised body that ensures best practice in the franchising industry, so it is worth finding out if the franchise company is a member of the BFA. This will indicate their operations have been fully audited, are deemed to be fair and are in the interest of the franchisees.

You should request a prospectus, which may be followed by an application form and an initial meeting. It's important that there is a cultural fit between you and the central team. If you are interested in becoming a franchisee, the central team will also want to be sure that you and your business represent a natural fit with the brand, as this will ultimately lead to your success in the growth of a long-term profitable business.

Perfect partners

Voltage Optimisation can not only reduce energy bills, but also works perfectly in tandem with solar PV to boost ROI, and further reduce payback periods and carbon emissions, explains **Geoff Clifton**, business development manager at VO4HOME

Voltage optimisation (VO) is appealing because it allows energy users to simultaneously reduce their electricity bills, carbon emissions and energy consumption with minimal effort. However, many smaller businesses that looked into the technology found that voltage optimisation wasn't perhaps quite for them, so many turned to solar PV as an alternative.

Now, a revolutionary voltage optimisation system has allowed these organisations definitive access to VO.

A new 100Amp 3-phase voltage optimisation unit, developed by VO4HOME, is primarily aimed at small and medium-sized enterprises (SMEs) with electricity bills of up to £20,000 per annum, and for those who choose to install it alongside PV, the benefits are even greater.

Added value

Though previously the two technologies might have been considered as a possible alternative to one another, now more and more people are beginning to recognise the added revenue that can be generated when a voltage optimisation system is installed together with PV.

VO technology works by eliminating a building's over-supply of incoming voltage as modern electrical equipment is designed to operate at its best at around 220V, but the average incoming low voltage electricity supply in the UK is 242V. This is a notable difference that provides no added benefit yet is still billed for.

By optimising to 220V and systematically managing the peaks and troughs in power generated, the VO unit reduces and stabilises the voltage; providing the optimum supply for all loads and reducing the amount of power used, and to be paid for.

However, when installed on their own, solar panels can actually exacerbate this problem.

Maximising revenue

To enable the electricity generated by the solar PV system to be fed back into the grid, the solar PV invertor will have to step the voltage up above the existing mains voltage. This can cause appliances to be subjected to an even higher voltage than the original mains voltage, which only increases the likelihood of failures, and offsets the revenue generated from Feed-In Tariffs (FITs).

Working side-by-side with solar PV, a VO system is able to address this by applying the same technology that it does to the low voltage supply to any power generated from the solar PV system; adding further savings and increasing the units of energy exported to the grid.

VO will prove particularly beneficial to buildings that operate throughout the night when the solar PV system is dormant and the load on the grid almost disappears. The VO unit is able to compensate by continuing to hold the site voltage at the optimum level and still provide significant savings.

Energy users, the environment, and appliances, all stand to gain from voltage optimisation

Carbon savings

Of course there is an environmental benefit too. VO helps cut carbon emissions from electricity generation, which are currently around 1lb for every kilowatt hour consumed. Using less energy will directly reduce the amount of carbon emissions produced, and can save around 330-500lbs of CO_2 emissions per year.

Slashing costs: VO4HOME's new 100Amp 3-phase voltage optimisation unit is designed to reduce energy bills for SMEs, with added benefits for those which have installed PV too

Energy users, the environment, and appliances, all stand to gain from voltage optimisation, but there is another beneficiary. Solar PV companies and installers stand to benefit from the technology by adding a VO installation service which will bring in additional revenue and genuinely benefit their existing clientele.

No further training will be required for solar PV installers as they already possess the skills required for the installation procedure which takes less than an hour and simply requires two wires in, and two wires out, to make it fully operational.

As these stand-alone technologies integrate further they will bring greater energy savings and efficiency, and added revenue for all concerned – except maybe for the energy companies that is.

Living on the edge

As the first UK renewable energy installer to fit the new SolarEdge PV energy optimisation system, **Michael Winstanley** of Cheshire-based The Greener Group gives the lowdown on how it is boosting the output of underperforming PV arrays

Historically, the only solution to an underperforming installation was to fit a new one. But the pioneering new SolarEdge product optimises the output of underperforming systems and can be retrofitted to any existing installation.

The Greener Group has been impressed with the increase in output following the installation of the product, and is keen to inform owners of domestic and commercial installations that if their solar PV system is underperforming, there is now a cost-effective solution.

The Greener Group was recommended to a client who was unhappy with the performance of its solar PV array since its installation in 2011. A site inspection revealed that the installation was spread across the house roof in three different orientations and there was also considerable shading from nearby trees. The Greener Group were aware of a new product by SolarEdge and was confident it was a suitable solution so spoke to its supplier, Dulas MHH, and arranged for the product to be delivered to site the next day.

The installation of the retrofit SolarEdge technology required the temporary removal of the solar panels to allow a power optimiser to be installed behind each panel. The panels and optimisers were connected in series and secured back in place onto the mounting rails. The feature that makes the product unique is the power optimisers that increase the energy output from the PV system by constantly tracking the maximum power point (MPPT) of each module individually. Moreover, the power optimisers monitor the performance of each module and communicate performance data to the SolarEdge monitoring portal for enhanced, cost-effective module-level maintenance. Each power optimiser is equipped with the unique SafeDC feature which automatically shuts down a module's DC voltage whenever the inverter or grid power is shut down. The result is that the PV array will operate at its optimum efficiency at all times and ultimately produce more energy per panel.

Laid bare: The power optimisers of the SolarEdge system, installed behind each panel, are designed to increase energy output from PV systems by constantly tracking the maximum power point of each module individually

This new SolarEdge system allows for a traditional installation to be upgraded and benefit from the enhanced features it has to offer. The system is compatible with any inverter and uses a smart bit of kit – the SolarEdge Safety and Monitoring Interface – which works with the power optimisers fitted behind the panels.

We calculated that the installation will generate an additional 400 – 600kW per year: an average increase of 28 per cent. The payback period on the investment is roughly 6 years, and from there, it will generate an additional £200-£250 per annum of additional revenue from the Feed-in Tariff.

Commercial applications

Having successfully installed the SolarEdge IndOP technology on a domestic installation, The Greener Group is keen to approach owners of under-performing commercial installations and discuss the potential gains for their business. During the solar PV rush of 2011 and 2012, systems were often installed in haste without proper design considerations. A commercial system that suffers from shading issues or split orientation could be significantly underperforming and hence not reaching its potential energy yield. Moreover, owners of commercial installations that were put in place as an investment could be earning much less than the projected amount.

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James Robinson, Senior Estimator, Steadfast Roofing

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Richard Lotherington, Director, Chase Green Developments

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Steve Scott, MD, Forster Energy

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Nick Turnbull, Director of Eco Solutions, Kingsley Group

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Learn to earn

Simon Pattison, Kingspan Environmental training manager, gives guidance on finding the right training provider

After recent uncertainties in the renewable energy market, when questions were asked about the government's commitment to green technology, we are now starting to see clear signs of sector recovery.

Installations of renewable energy technology across both commercial and domestic applications are expected to increase. And opportunities for solar thermal, spilling out from the Code for Sustainable Homes, will expand still further now the tariffs for the domestic Renewable Heat Incentive (to be introduced next year) have been announced.

There are real opportunities out there for qualified tradesman to upgrade their skills, understand the latest technology and take advantage of the business opportunities and earning potential the sector will provide, both now and for the foreseeable future.

Renewable energy technology is tried and tested, having been around for more than 20 years in one form or another, but for many building owners, it's still a bit of a leap of faith. Will it work? Will it deliver the expected returns?

Clearly, to achieve both, it's important the installation is done correctly and in line with manufacturer's guidelines, otherwise the system may fail or have a longer payback period than is necessary. An incorrectly specified, over-sized solar thermal system, for example, will not only be larger, more inefficient, and more expensive than it needs to be, but it also runs the risk of over-heating.

Installations that are fit-for-purpose and fully guaranteed help instil confidence in the minds of building owners that the technology works and that we no longer have to rely on the burning of fossil fuels to generate electricity; micro-generation can provide most if not all our needs, with the added bonus of income generated through the tariffs.

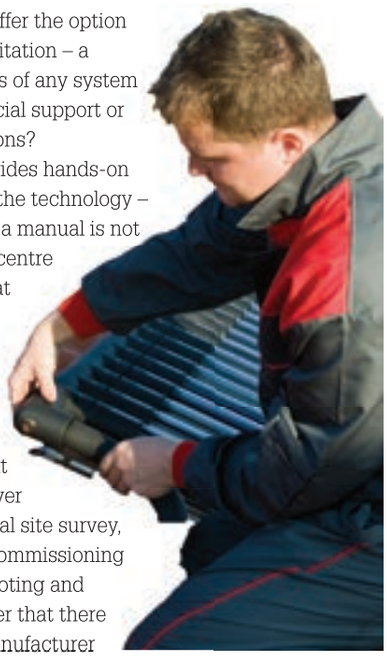
This shift in behaviour will not only lower carbon emissions and help mitigate climate change; it will also provide long-term fuel security and raise millions of people out of fuel poverty.

All in all, the case for installing a renewable energy system is a pretty powerful one, and we all have a role to play in ensuring supporting the industry as it gains critical growth.

So, whether you are a potential installer embarking on training for the first time, or you are an established installer looking for a refresher course on the latest technology, skills and industry knowledge, how do you choose a training provider?

- Check that they have approved industry accreditation – Kingpsan Environmental, for example, is approved by Logic Certification for the delivery of training on unvented systems, solar thermal and heat pumps.
- Training to be a renewable energy installer can take a qualified plumber as little as three weeks and like the technology, it doesn't cost the earth so check their fees (our training on solar thermal systems costs from £300).

Hands on: Learning theory is no substitute for practical installation experience at a well-equipped training centre, according to Simon Pattison, Kingspan Environmental training manager



- Does the training then offer the option of pursuing MCS accreditation – a requirement for installers of any system that aim to attract financial support or for Green Deal installations?
- Ensure your course provides hands-on experience of installing the technology – going through theory or a manual is not sufficient – the training centre is fully equipped and that numbers on the courses are limited to ensure delegates get individual attention.
- Ask for full information about the course content which should ideally cover everything from the initial site survey, through installing and commissioning a system, to trouble-shooting and maintenance. Remember that there are courses covering manufacturer training as well as accredited certification training.
- Are there any extras? For example, our training also includes the provision of a quality management system, if required, discount product vouchers, as well as advice on grants, after-sales and technical support.

Good luck!

Solar flair

Solar thermal has until recently been widely regarded as the poor relation of solar PV. But, wonders **Simon Allan**, Plumb Center's renewables director, with the promise of domestic RHI next year, is that about to change?

The average annual fuel bill is now £1,420, and since around 78 per cent of British homes rely for heating and hot water on mains gas, the cost of which is predicted to keep on climbing, anything that can reduce gas usage has to be worth a look.

Solar thermal has the potential to be the most popular renewable heating system, one reason being that it is easy to combine with an existing conventional hot water system, rather than relying on an immersion heater to boost water temperature. This technology is also low maintenance. Once installed, a solar thermal system will operate with minimal running costs and will continue to deliver free energy from the sun for 20 years, as a minimum. Of course, each renewable technology suits particular buildings better than others, determined by factors such as a building's size, location, orientation, and the extent and timing of the occupants' energy requirements.

For installers and homeowners it's a great first step into renewables, and at Plumb Center we're keen to make this happen. Our branch staff have been trained so they're now as knowledgeable about solar thermal products as they are about traditional boilers.

With the domestic Renewable Heat Incentive (RHI) on the horizon, this is the perfect opportunity for installers to broaden their skills base by offering solar thermal installation services. In association with Sevenoaks Energy Academy, we offer a four day training course in hot water thermal systems, which may be of interest to installers anticipating a surge in demand when RHI goes live. This course enables candidates to select the most appropriate system for a building, based on the occupier's needs, and to install and maintain any of the systems commonly found in the UK. Such courses are a requirement of the minimum technical competency (MTC) document, and the certificate is recognised by all bodies offering routes to the Microgeneration Certification Scheme (MCS) as evidence of suitable training.

Fame game: Solar thermal could overtake its more widely-known sister technology solar PV in the popularity stakes, according to Plumb Center's renewables director, Simon Allan

This is the perfect opportunity for installers to broaden their skills base by offering solar thermal installation services

Government initiatives like the Green Deal, RHPP and domestic RHI – are making renewables more affordable, and we're here to help installers make the most of this market.

Despite the delay in the introduction of the domestic RHI, the new voucher values under the RHPP will certainly bolster interest in relevant technologies in the interim, with the figure for solar thermal doubling from £300 to £600. RHPP payments are, in effect, an advance of some of the RHI money, and will be subtracted from the total amount of RHI money due. The good news is that these payments are available to any householder fitting a solar thermal system, whereas other technologies are only eligible for households not currently using gas heating.

Households now need to obtain a Green Deal assessment in order to qualify for the RHPP payments. This should focus attention on how renewable heat could fit with energy efficiency improvements for a particular home, and help ensure that the appropriate measures are chosen. The increased voucher values are intended to reflect the cost of a Green Deal assessment, as well as the cost of getting these technologies installed in homes. This development should mean there are even more business opportunities for heating installers.

Back to the future

Andy Buchan, md of Cotswold Efficient Energy Centre (CEEC) and director of Future Renewable Energy, examines ways to boost uptake of solar thermal back to its pre-2010 deployment level

From 2005 to 2010, solar thermal at the CEEC was amazing. Pretty much all our visitors wanted it and solar thermal was like a Ferrari flying down the motorway.

Flat plates, evacuated tubes – we were installing them all on domestic homes, guest houses, swimming pools, and it was a case of making hot water while the sun shines.

Then came the PV foot brake and the Ferrari came to a grinding halt.

During the past 30 months, we have found that our visitors' attitudes have changed and they are now more focused on saving money due to high energy costs.

Afterall, PV does not go into stagnation and when electricity is not required it still makes money. Biomass and heat pumps are also on the priority list ahead of solar thermal and are both seen as a better investment.

We advocate that solar thermal is a good install with ground source heat pumps, but many customers are at their budget limits so it's excluded from the job. We see a big opportunity for solar thermal when it is installed on gas grid properties as the only technology that will attract funding via phase 2 of the RHPP.

The best investment for solar thermal is when there is a large requirement for hot water and the benefits stack up. For instance, a one bedroom flat with a shower, basin and kitchen sink would be a poor investment as the install would still require all the components that a four bed house with two bathrooms would need. The higher the demand the better the investment, especially if the domestic tariff is metered.

If you have an oil-fired boiler, it makes a great deal of sense as solar could produce 60 per cent of the hot water demand. There is the added advantage of prolonging the life of the boiler too as it's not working 52 weeks of the year when solar thermal is present.

At CEEC, many of our earliest solar thermal customers saw the technology as a life style change and good for the planet. They are now reaping the benefits as fuel prices have increased ten-fold. Those who have benefitted most have been those with outdoor swimming pools, as this is an enormous heat sink, hotels, guest houses, golf and football clubs and all who use large quantities of hot water.

But we need the domestic RHI tariff to be increased further on what has been announced, and honoured if we are to see solar thermal panels being fitted at pre-2010 levels.

The industry would be given an enormous kick start by increasing the RHPP to £1000 – an arrangement which would not be too crippling to DECC as they take it back in the last year of the domestic tariff.

The more we insulate our homes, the less heat we require but one thing is for sure – we shall always need our normal quantity of hot water and there is no cheaper way of achieving it than by using nature itself.

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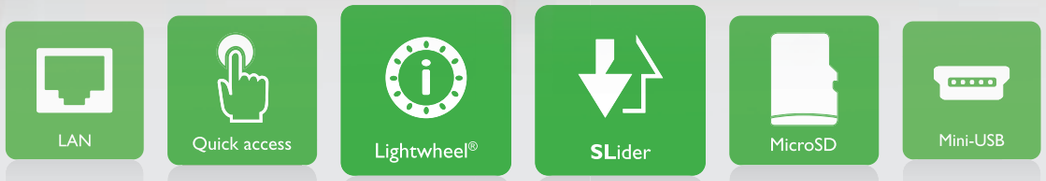

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Heated debate

Some voices in the industry state you can't heat a poorly insulated property with an air source heat pump efficiently. This is incorrect, explains **Alan Dunn**, business relationship manager at Husky Heat Pumps

Of course it's always best to insulate where possible. But what if it's not practical to do so? Does that mean we must rule out an ASHP? At Husky we say no.

If an air source heat pump saves money on a well insulated property, are we supposed to believe it does not on a house with poor insulation?

Plenty of questions and one answer – an air source heat pump will save money against LPG, oil and even gas on a poorly insulated property, fact.

As both manufacturers and installers, Husky engineers are installing heat pumps on poorly insulated properties, which can't be insulated anymore, on a weekly basis. How do we do it?

It's actually simple if the engineer abides by the following rule: Calculate the heat load of the property, make sure the heat pump can deliver this load and calculate emitters to deliver the load.

The heat pump will remain the same in efficiency (COP) as in well insulated homes; the running costs are simply more. If you save 50 per cent on a well insulated property, you will save 50 per cent on a poorly insulated property.

There are finer details to take into account; however we achieve success here time and time again. It's just about knowing how.

Regardless of the fuel you should insulate fully to reduce running costs. Also to be eligible for the RHI payments you must have at least 250mm loft insulation and your cavity walls must be insulated were applicable.

At Husky we are heating stone buildings with as low as 40 degrees flow in the central heating system.

So, when you ask the question of whether or not a stone home can be heated using low temperatures in the central heating system, provided by ASHPs, you now know the answer is yes.

Community service

Peaks & Plains Housing Trust has opted for five Mitsubishi Ecodan heat pumps to provide communal heating to a 36 apartment project.

Neighbourhood watch: Peaks & Plains Housing Trust turned to Mitsubishi's Ecodan heat pump model to heat its 36 apartment project at Hunter's Gate in Handforth, Cheshire

The new system provides the two bedroom properties with a total of 200kW of renewable, cost-effective underfloor heating and also takes care of the tenants' domestic hot water requirements whilst keeping the Housing Trust's carbon emissions to a minimum.

Ian Foden, design engineer with Manchester-based EDP Design Consultants, and who designed the system for the £3.7m Hunters Gate development in Handforth, Cheshire, said: "To achieve Level 4 of the Code for Sustainable Homes the apartments had to demonstrate a 44 per cent reduction in carbon emissions over the levels required by the 2006 Part L building regulations.

"Using Ecodan CAHV air source heat pumps we achieved a reduction of nearly 60 per cent because this technology is extremely efficient when specified and installed correctly."

Eligible for the RHI, Mitsubishi Electric's Ecodan CAHV systems are designed to operate singularly or form part of a multiple unit system. A full energy monitoring package has been installed on site to track the system and report live data remotely enabling the housing trust to keep a check on how the system is performing for their tenants.

Loveday Gimson, development officer for Peaks & Plains Housing Trust, added: "We're incredibly proud of what we have achieved with Hunters Gate and I have no doubt our tenants will be happy here. Knowing they can afford the necessities of life, such as roofs over their heads and warmth when they need it, adds to our tenants' quality of life."

Wheel of fortune

The last six months has transformed the prospects of the air source heat pump market, says **Chris Higgs**, heat pump sales & technical manager, Solfex

For the majority of the general public, today (July 12) is highlighted only by being a very warm Friday in July. For anyone involved in the renewable heat industry though this is an exceptionally important day, and one which the industry has waited for – for the best part of four years. The domestic RHI legislation and tariff levels being passed through parliament mark the government's commitment to a sustainable air source heat pump future.

In February, I wrote an article which discussed the fortunes of the heat pump market as it then stood. Over six months later, a lot has changed. Initiatives have been implemented which are geared towards ensuring that this industry is as sustainable as possible. One such initiative being the £250,000 scheme aimed at cutting the cost of renewable heat training for microgeneration installers introduced in March 2013. With our industry being relatively new, support to increase the skill set of installers is very important.

With our industry being relatively new, support to increase the skill set of installers is very important

Arguably, the most important announcement is the confirmation of tariff levels for air source heat pumps. At 7.3p/kwh we now have an extremely positive figure on which to base financial calculations. Perhaps more important is the notion that committing to a tariff level will provide end users with the confidence that air source heat pumps are a viable alternative heating source that has received the full backing of the government.

Whilst there are a number of positives, figures from the microgeneration certification scheme website highlighted the need for incentive confirmation. In the six months up to July 2013, MCS accredited installer take-up has dropped by 2.5 per cent whilst actual MCS installations have dropped by around half a percent compared to the first six months of 2012. Whilst neither figure is extremely negative, it does show that installers looking to become accredited and MCS accredited domestic installations in general have reached a period of stagnation, which I believe the RHI will remedy.

I also believe that supplier support has had a detrimental impact. On a daily basis we speak to installers who are looking to move away from their current air source heat pump supplier to one which is able to offer quality equipment and the added value support to back it up.

To a new MCS accredited installer, an air source heat pump may be far removed from their previous gas or oil boiler installations. This is why it is important that an installer utilises a supplier who is able to guide them through the entire lifecycle from enquiry to commissioning. The mark of a good supplier is one who understands the equipment and has dedicated pre and post sales technical support in house. Having both of these types of sales and technical support in house means that, should the installer require assistance on site at time of survey or at time of commissioning, this can be offered. This kind of service can be a real helping hand to an installer who is not familiar with a new range of equipment. Another key point is to ensure that as many relevant, good quality components are included within a package as possible. This is to ensure that installation cost and time can be kept to a minimum whilst also ensuring that fault diagnosis, should there be any, is a straightforward process with as few unknown quantities as possible.

Firm backing: A lack of installer support from suppliers has had a negative impact on the ASHP market, says Chris Higgs, Solfex

It is important that an installer utilises a supplier who is able to guide them through the entire lifecycle from enquiry to commissioning

Breaking the gridlock

With electricity grids around the world having to accept increasing loads from intermittent renewable energy sources, **Nick Ni**, marketing director at Verde LLC, tells REI why hydrogen storage is the best way forward

With concerns about the global environment and the exhaustion of fossil fuels, many countries have rightly focused their efforts on developing a clean and renewable energy infrastructure, both on small and larger scales. But with more and more wind power installed around the globe, people have started to notice some serious issues.

One of the key barriers to greater utilisation of renewable energy sources is the intermittency of their supply; this is especially the case for wind and solar power. Because the wind is not always blowing, and sun not always shining, there is a disparity between supply from these resources and the demand by end consumers. This is one reason why dispatchable energy solutions like natural gas and coal fired power plants exist; to supply the electrical demand based on when it is needed, not according to an uncontrollable natural resource like wind.

Doubling up: Massachusetts-based Verde LLC has developed the Verde 1 wind-hydrogen power generating system to store excess wind power and produce hydrogen in a less carbon-intensive way

Hydrogen, a flexible measure of storing excessive renewable energy, has come back into the public consciousness after staying silent for a few years. A major reason for its return is the significantly increased wind curtailment loss, when turbines have to be shut down due to an overloading of the local grid, which calls for quick but economic action.

In addition, hydrogen production in the world is currently dominated by high pollution methods using fossil fuels, while only four per cent of hydrogen produced in the world is currently produced by clean electrolysis. Given the increasing cost of fossil fuels, and decreasing cost of clean energy installation and operation, there is a huge opportunity to save energy losses and reverse environmental pollution, if we can kill both birds with one stone.

Companies have been trying to develop the one-stop solution to solve this complicated problem. For example, Verde LLC is trying to develop the auto-adjusting wind-hydrogen power generating system, or Verde I, to collect extra wind power during peak periods and produce hydrogen in a clean and effective way, as a means of energy storage. This technical trend shall be more widely applied since efficiency and cost-return benefit are becoming more critical when the renewable energy producers are trying so hard to replace the traditional players in the market.

If we combine wind power with systems like Verde, the hydrogen not only can be converted back to electricity through PEM fuel cells on houses, shopping centres, hospitals, schools and government facilities, but can also be used for hydrogen electric vehicles and industrial production processes.

One of the key barriers to greater utilisation of renewable energy sources is the intermittency of their supply

Overall, hydrogen storage can deliver a number of benefits to the society:

- Environmentally friendly
- This system increases the efficacy of clean renewable energy sources through a higher utilisation of wind power and improving the industrial production of hydrogen without the use of fossil fuels.
- Greater stock and sustainability
- The energy capacity of hydrogen is 9000 times that of fossil fuels. The global capacity of wind energy is 72 TW, compared with the current global energy consumption rate of 15 TW.
- Easier delivery and wider usage
- A hydrogen fuel cell of less than 100kW is very convenient for household facilities. A greener future calls for more clean energy installations, but we need a thorough consideration of all the factors. Hydrogen technology has presented a perfect solution for us.

Basic instinct

David Sharman, managing director of UK wind turbine manufacturer Ampair, outlines how the company has tried to simplify small scale installation

For decades the wind turbine industry has focussed on increasing size and capacity to improve performance. What we are finding now is that anticipating and managing the constraints that smaller turbines operate within is an essential element of our service. These constraints include terrain and siting, planning requirements in terms of height or noise level, finance, specification and ability to absorb peak energy production. It also includes maintenance and monitoring of performance versus the original business case.

Simulating conditions

The proAmpair simulation tool is a software programme we've developed for analysing off-grid and on-grid renewable energy systems. In respect of wind turbines, it analyses terrain and weather patterns, amongst other factors, to accurately determine the performance of our turbines prior to installation. It simulates natural wind and solar resources, as well as additional factors such as battery and electronic losses, battery charge and discharge cyclic performance. However good the wind assessment resource though,

Managing the constraints that smaller turbines operate within is an essential element of service

mistakes will be made and it is important to have confidence that the tower and turbine can be speedily relocated. The only part that is ordinarily lost is the concrete foundation, which we have tried to combat with Ampair's rapid deploy mast base (RDM). The RDM is designed to allow the turbine to be installed or recovered in a single day using either weighted feet or ground anchors.

Turbine specification

Many of our customers have single and unique locations in mind, and we have found that turbine specification is an area that can trip people up. By using turbines such as the Ampair 6000 with a maximum power output of 6kW and an annual energy production of approximately 10,000 kWh, this size reduces the visual and acoustic signature, which helps with gaining planning consents. However to deal with grid management constraints, and ease installation, we have introduced the GridClipper which will throttle the exported power back to approximately 4kW meaning that the 6kW turbine can be installed on the single phase grid without needing the grid operator's consent, using a 'connect, then inform' G83 procedure. If appropriate the excess power of approximately 2kW can be diverted into useful heat, either for air heating or water heating (or another use, such as refrigeration).

The Ampair 6000 is shipped as a factory-built unit for speed of installation. When on site all that is required is to add three turbine blades, connect the factory pre-wired inverter and interconnect panel, and to erect the tower. The fully sealed hub contains a factory-set passive pitch control governor, and the nacelle contains a factory-set electromechanical brake. The combination of a large diameter 6m rotor and passive pitch control and full authority brake means an installer can confidently select the same turbine for both low and high wind sites.

Customer care

We also aim to address the needs of customers and installers post set up in a number of ways. Firstly it is important to design and manufacture turbines for trouble-free operation. Our customers are also encouraged to make use of a remote monitoring service, which monitors a full set of weather and performance parameters on the web, providing continual feedback on the turbine's performance. This enables both consumers and installers to understand any issues remotely and plan remedial action before going to site. This service also has the added bonus of allowing customers to educate themselves about the product, informing their overall understanding of the turbine, and helping our industry in the longer term.

Flying start: David Sharman, Ampair, says the Ampair 6000 small scale turbine has been designed with ease of installation in mind

Deal breaker?

With The Green Deal having come under sustained attack since its first quarterly statistics were published in late June, **Paul Stephen** asks two leading industry experts what more can be done for the flagship scheme

Admittedly the news that only four of the c.45, 000 assessments completed by June had been turned into completed plans was a little underwhelming to an industry pinning its hopes on Green Deal.

Green Deal accredited practitioners, and equally the much larger number of installers waiting in the wings to join the scheme, were unlikely to have been filled with much enthusiasm by the barrage of negative headlines which followed – posing questions over the long term viability of the scheme.

Any new and high profile concept will attract its critics, but how much of the cynicism can be justified? With a large plank of the government's decarbonising agenda at stake, not to mention the business opportunities available to renewable energy installers entering a parallel energy efficiency market, what can be done to repair Green Deal's image?

Loan star

Ian Feeley, business development manager at The PK Group, refutes accusations that high interest rates are killing off demand for Green Deal finance

Vote winner: Despite being dogged by teething problems, Green Deal will eventually win over its critics when the savings start stacking up on energy bills, says Ian Feeley of The PK Group

The Green Deal has received a lot of bad press recently; some of it deserved and some based upon misconceptions. Apart from the obvious fundamental errors (such as launching an initiative long before it was actually ready), there seem to be two main on-going criticisms levelled at the scheme, so perhaps it is worth examining them more closely.

The assumption that no-one wants it was based on the fact that thousands of Green Deal assessments had been carried out, yet only four had gone through to completion. In truth, anyone wanting a completed plan suddenly hits a brick wall as none of the Green Deal Providers (at the time of writing) have access to funding to carry out the proposed work. As a Green Deal Installer and Assessor organisation, we are currently advising the many people who are contacting us to sit tight and wait until funding becomes available before having an assessment carried out.

The second assumption is that the interest rate is too high. I suppose if it was clear what the interest rate will be in reality, then it would be easier to evaluate. With only four Green Deal plans completed, this is not so easy to do. The best rate I have heard is 6.96 per cent with the worst being 8 per cent. And yes in today's climate of low interest rates this may seem a bit high, however, the rate is fixed and for 25 years. Will the bank base rate be 0.5 per cent in 5 years, never mind 25? Add to that the fact that if you chose a personal loan, as opposed to one on the energy meter, many would struggle to get it anyway. Has anyone applied for a loan recently? We also shouldn't forget that, if you subsequently decide to move during the course of a bank loan, then you either have to pay it up, or continue repaying the loan whilst the new homeowners benefit.

So, is the Green Deal a complete flop, or just a great scheme dogged by the usual teething problems and bureaucracy? To me it looks like the latter, a scheme set up with the best of intentions and one that will eventually be very good for millions of people and the country's carbon emission reduction targets. Will it single-handedly save the planet? Unlikely, but it's a start. Will it help millions reduce their ever increasing energy bills? Most definitely, so it gets my vote.

Second coming

The Green Deal has had a very poor start, but can easily be put back on track, says **Roderick Pettigrew**, chief executive of the Building & Engineering Services Association (B&ES)

It is something of an understatement to say that the Green Deal (GD) has had a 'sluggish' start. The early figures make brutal reading for Greg Barker and his staff at the Department for Energy and Climate Change (DECC).

We did expect a slow start, but possibly not quite as slow as this; particularly as the government sought to make a lot of political capital out of the initiative. The problem is that they have saddled the scheme with too many costs for the end user.

The assessment costs up to £150 and is not refundable. The finance packages come with a 6.9 per cent interest rate over 25 years – which is huge in an era of low interest rates.

Risk

We advised DECC against this level of charging, but it clearly felt it needed to make the scheme attractive to potential finance providers. The trouble is that this has made it less attractive to potential users. Also, the Golden Rule is absolutely not a guarantee. Consumers feel they are being asked to take a bit of a financial risk.

This has been exacerbated by software problems with the SAP model used to predict savings. In some cases, potential energy bill reductions were over-estimated by up to 77 per cent.

However, the principle of the scheme is sound. In theory, householders would find the prospect of lower energy bills at no upfront cost attractive, but what is happening in practice is rather different.

Consumers feel they are being asked to take a bit of a financial risk

Trust

Loft and cavity wall insulation was being offered for free by local authorities and energy suppliers before the GD – now it is still free, but only in theory and if the improvements do deliver the savings promised. Householders think they are taking a chance – and that brings us to the question of trust.

The heating and plumbing sector has a chequered history when it comes to rogue trading – many people are naturally suspicious. Sadly they don't particularly trust politicians either at the moment. It's an unfortunate combination for a UK public that already has a healthy scepticism about anything that sounds too good to be true.

The government's intentions are good, but this betrays its lack of understanding about how the industry works.

However, all is very far from lost. The government will surely look again at the finance – the costs to consumers are clearly proving to be a major turn off – and they are already trying to address the software glitches. The slant of the publicity for the scheme could be different – there is too much emphasis placed on the financial payback when in fact the improvements would pay back with or without a GD finance package.

Problem solving: Green Deal will succeed, but prompt action is needed, says Roderick Pettigrew, chief executive of the Building & Engineering Services Association

Availability

The 'cash back' incentive scheme has also proved problematic because it is only available via Green Deal Providers. If it was made available to small, properly accredited installers projects would pick up. Many good, independent installers with a reputation for reliability among their local community are simply ignoring the opportunity because they don't want to pass business onto GD providers. Why should they? So let's make it easier for them by giving their customers access to the cash back offer.

So, it is a deeply flawed scheme, but one that can be saved with some careful tinkering. However, improvements need to be made quickly before the scheme drowns under the deluge of bad press and industry scepticism.

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Going the extra mile

Time spent educating end-users during installation and commissioning will help customers get the best out of renewable heating and hot water systems, helping them to save money while enhancing the industry's reputation, says **Stuart Gadsden**, heat pump specialist at Daikin UK

Choosing a renewable heating and hot water system is still a leap of faith for many customers. This is why it is up to the installer to help educate customers' behaviour, as well as installing and commissioning a new system to the highest standards. Ensuring the homeowner or tenant understands that their new system operates differently to a conventional fossil fuel boiler system or electric storage heaters will help them get the best out of the system, namely lower fuel bills and better levels of comfort.

Under the MCS standard, system designers are required to provide a full explanation of the running cost estimates, including system pumps, cylinder losses, use of immersion heaters for hot water and so on. Home owners or tenants should receive a copy of the Heat Emitter Guide, which can help explain the impact of emitter selection and design flow temperature on the estimated heating system efficiency.

The installer should ensure the system is designed to maximise efficiencies. For example, an air-to-water heat pump should be designed and commissioned to deliver the lowest possible water temperature to the heat emitters, while still maintaining comfort levels. This can be achieved by using larger emitters. Additionally, the installer will ensure that any auxiliary electric heaters are programmed only to come on when absolutely necessary and always below the MCS design temperature.

Residents need to adjust to the idea that running their new system at a lower temperature for longer periods is more efficient and cost effective than if it is on for short bursts at higher temperatures. This is an important concept to explain fully, especially in retrofit situations when the end user may previously have been using a totally different heating system, such as night storage heaters.

User friendly: Choosing a heat pump system with clear and simple controls is crucial if end users are to be comfortable adjusting settings

To maximise efficiency, the installer should commission the system to run using automatic weather compensation. This works by providing higher flow water temperature when it is cold outside and a lower flow water temperature when it is warm, to ensure that the heat pump operates at the highest possible efficiency. Consequently, residents will also need to appreciate radiator temperatures will vary throughout the year.

Heat pump systems are typically designed to give hot water priority over space heating, so hot water timer periods should, wherever possible, be set during times when the space heating demand is likely to be low, for example in the early hours of the morning. This will ensure the heat pump is available for space heating when required.

It is particularly important to choose a heat pump system that has clear and simple controls so that end users are not too wary of adjusting their new system. In the past, control systems have been difficult to interpret but the latest systems offer simple interfaces, with plain text rather than symbols on an easy-to-read back-lit screen. Some controllers can also act as an in-room thermostat and display energy usage.

It is however worth considering restricting access to the heat pump controller to a few key functions, to prevent settings being changed inadvertently that could result in inefficient operation of the heat pump.

Finally, most heat pump manufacturers provide technical support and training to their customers. Many will also help by providing end users with user guides which explain very simply how to use the new heating system.

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Countdown begins to Solar Energy UK 2013

The UK's largest solar exhibition, Solar Energy UK, is preparing for an even bigger 2013 as the show branches out yet again.

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

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

As solar power has become more prevalent in the UK there is an increasing demand for convergent devices that use solar PV or solar thermal to not only generate energy, but also include inverters, energy monitoring and even storage in one simple plug-and-play box. The sector is realising that as more renewables are connected to the grid, issues of energy use and grid capacity become increasingly important – that is why this year the show's organisers are introducing Distributed Energy UK.

Distributed Energy UK 2013

More than 90 per cent of surveyed attendees at last year's event said that they are looking for new products to install and distribute outside the traditional solar industry. So this year Solar Energy UK is delighted to announce Distributed Energy UK – a new event that will be incorporated with Solar Energy UK at the NEC in Birmingham.

Distributed Energy UK will look at how solar will integrate with a host of new green technologies, including:

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

Feature areas

Four feature areas will play host to live demonstrations and discussions. Practical PV will provide answers to your most intricate installation questions, while Practical Large-Scale PV will demonstrate practical realities of large-scale installations.

This year's event will also house a dedicated renewable heat feature area; talk of the newly-introduced Renewable Heat Incentive is set to dominate the area. Elsewhere, the Eco-house feature will return, boasting a building-integrated PV-led focus on how solar can complement a whole house solution.

Seminars

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

The Solar Energy UK Technology Hall will deliver up-to-the-minute information through a series of half-day seminars focusing on PV policy, solar market trends, product pricing and technology advancements, grid connectivity and storage, and the role PV will play in the Green Deal.

This hall takes care of everything else you'll need to know as part of the UK's prosperous solar market. Taking a look at wider policy issues and how they affect your business, the continued revival of large-scale solar under the ROC mechanism, local authority projects and other areas of solar business including finance mechanisms and legal requirements for solar PV and thermal technology – this seminar series covers it all.

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

The masterplan

Mastervolt is bringing to market a completely new monitoring solution for PV users wanting real-time information about their system without additional expenses. The new solution, IntelliWeb, has been launched together with the new Soladin WEB inverter series for outputs between 700 W and 1.5 kW, and will be present on Mastervolt's stand – H22.

The IntelliWeb is completely free of charge and designed for easy operation. This starts with the installation of a Soladin WEB inverter with integrated standard Wi-Fi interface. Using the enclosed mounting bracket, the installer attaches the Soladin to the wall, connects the solar modules in one string – and the inverter will start up automatically. All that is left to do now, says Mastervolt, is to enter the country and access data for the Wi-Fi and register by entering name and email address into the IntelliWeb portal.

The portal's operation is designed for clarity and ease of use: The start screen displays the system's performance in real time, the total yield and earnings. A chart showing the performance curve can be viewed at the click of a button and data from several inverters can be shown in one chart.

Mastervolt adds that installers will appreciate the additional function which gives remote access for updating the Soladin WEB firmware via IntelliWeb, and are invited to view the product at this year's show.

H22

Complimentary offer: Mastervolt will be exhibiting IntelliWeb, a free of charge PV monitoring solution providing realtime data to users

Name game

DulasMHH will be exhibiting at Solar Energy UK 2013 and once again has secured sponsorship of the Practical PV Area.
The Machynlleth-based wholesaler says it is looking to make the Practical PV Area a vibrant and informative area, showcasing cutting edge technologies from its preferred suppliers. DulasMHH is also excited to announce that it will be launching its new brand BayWa r.e Solar Systems at the show.

Explaining the name change, Ben Robinson, business development manager, said: "We were the wholesale solar PV section of renewable energy pioneers Dulas Ltd that first started trading in 1982. Then in 2011 the wholesale department was bought by major German PV distributor MHH Solartechnik.

"The new solar PV distributor division was then renamed DulasMHH and in June this year we celebrated our second birthday. Earlier this year MHH Solartechnik changed their company name to BayWa r.e. Solarsysteme GmbH to match that of our overall parent company BayWa r.e. renewable energy, a part of the BayWa AG group company. So from the beginning of September we will also be changing our company name and will become: BayWa r.e. Solar Systems Ltd."

As part the wider BayWa Group, DulasMHH claims it is able to offer more highly competitive pricing with direct access to Europe-wide stocks of high quality products, including its own Novotegra mounting solutions, which will be showcased within the Practical PV Area.
D10

SMArt solar

High standards: SMA Solar can boast the only PV products to be manufactured in an independently-audited zero carbon, scope 2, European facility

Energy management technologies will once again be the focus of **SMA Solar UK**'s product range at this year's show.

With inverters manufactured at the only ISO14064-1 verified zero carbon scope 2 manufacturing plant, SMA Solar UK will be showcasing its solutions for a range of PV applications. From the SMA Smart Home intelligent energy management system for private households, right through to its Complete System Solutions for PV power plants.

At Solar Energy UK 2013, SMA says it is keen to demonstrate the Smart Home system to visitors. Unique in the marketplace, it is designed to intelligently control household appliances on the basis of PV generation and consumption forecasts and integrate optional storage systems to significantly increase the self-consumption of solar electricity. SMA will also show its collaboration with other manufacturers of household appliances and heat pumps to ensure optimal integration of additional components into the intelligent energy management system.

With an ever-growing demand for domestic battery storage devices and integral to the SMA Smart Home, SMA will also showcase the Sunny Boy Smart Energy, a wall-mounted large volume PV inverter with integrated battery storage.

At the exhibition, SMA will also have an area to 'ask the expert' about its product range and talk to its PV specialists to discover how you and your customers can benefit from large-scale PV investment.

D40

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Healthy return

Safety first: Santon is showcasing its Fire-fighting safety switch (FFSS) for the safe isolation of a PV array on a building

As one of the biggest suppliers of switching solutions for the PV sector, **Santon Switchgear** says it is exhibiting a range of products at Solar Energy UK 2013 that address the growing concerns within the industry of using equipment unfit for purpose.

One such product is the new Silios D range of true on-load DC switch isolators. The Silios D is an IP66 enclosed lockable isolator designed for single or two string systems with ratings up to 32A and 1000v. It has a pressure equalising valve incorporated which is designed to negate any risk of condensation and give assurance and peace of mind to the installer. Six and eight pole versions are available but in different, larger enclosures.

Another product developed by the company is the Santon Fire-fighter Safety Switch (FSS) which is said to be the most complete and safe solution for safely isolating the PV array on a building. Each unit switches three strings at a maximum of 1,000v DC 25A – a control panel can operate fifteen FSS units. The FSS is ideally located as near to the PV panels as possible, either on the roof or in the attic/loft, so that the DC cable entering the building does not pose a threat to the fire fighters. The FSS incorporates the Santon true DC switch so that it safely switches the DC on-load.

Santon Switchgear will also exhibit a DC Arc Detection Unit (ADU). Developed to UL1699B, it can detect a series arc in the installation and gives visible and audible indication of a DC arc. It can also be integrated with an existing fire safety system or Santon Fire-fighter Safety Switch (FFSS) and can be fitted new or retrofitted into existing installations. **P2**

Staying ahead

Coping mechanism: Zenex Solar invites installers to its stand to talk about dealing with the new price regime of Chinese PV products

Wholesale distributor **Zenex Solar** will be at Solar Energy UK 2013 to display its new products and to talk to installers about its upcoming accreditation scheme.

"Our aim this year is to help our customers remain competitive and ahead of the game as we settle into the period of Minimum Import Price (MIP) on Chinese PV," said Zenex sales director, Liz MacFarlane.

"Not only have we signed an exclusive UK supply deal with Del Solar, part of Taiwanese giant Delta Electronics, but we also plan to help our customers grow their own business as we move into this new era. With our partner JA Solar we aim to deliver an installer accreditation scheme which will deliver large-scale commercial installation opportunities to JA Solar certified installers."

Zenex says it is extremely confident in the package of services it offers to installers including high level customer service and quality products.

"With our range of Fronius, Samil, Del Solar and Solis inverters plus LG Electronics, JA Solar, Eging and now Del Solar modules, our customers know that Zenex only offer the highest performing products," added MacFarlane.

"We make solar simple by offering a fully flexible supply service of all things PV. Zenex is known for its great customer service, high quality competitive products and agility in times of change.

"We are a dynamic team and we think on our feet, meeting industry challenges head-on so that our customers don't have to. To help navigate MIP we have a range of products each with their own strong unique sales points above and beyond price."

C10

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Perfect partners

At this year's show **Libra Energy** will be displaying many of its panel and inverter options plus ancillary parts from manufacturers including Canadian Solar, Hyundai, Solsonica, Chint , Enphase, Omnik, Power-One, Clenergy, Salzer and others.

Based in Doncaster, the B2B wholesaler primarily supplies domestic kits and sub 250kW commercial systems on a daily basis to its UK customer base. The company also boasts strategic partners which can offer technical assistance and design in addition to its own internal technical and design teams based in the UK and the Netherlands.

Paul Bradbury, UK general manager, said: "Our product portfolio is ever growing with new supply partners added on a regular basis. We are careful to choose our products from experienced companies with established histories and quality.

"Established for seven years, we have grown year on year and are looking to expand further into new markets over the next 12 months."

He added: "We also offer customer support days in our large training room, these can be tailored to suit your needs and can cover technical and installation, finance packages, supplier product launches etc."

For installers, Libra Energy also offers next day delivery from its UK distribution depot plus, when necessary, it can draw stock from its larger facility in the Netherlands.

Stand and deliver: Libra Energy offers a comprehensive delivery service from both its UK distribution depot in Doncaster, and a larger base in the Netherlands

The company is also keen to talk to Solar Energy UK 2013 visitors about its recently-launched commercial finance package which it can offer through its installer partners. For more information about this package or to discuss becoming an installer partner, visit A30.

A30

Creative solutions

Sibert Solar will be displaying a range of the company's key balance-of-system (BoS) products for visitors to get hands on with.

In addition to previously exhibited inverters from Eltek and monitoring/control solutions from Greenologic, Sibert Solar will also have new Power-One Micro units on display as well as other products from REDtip (roof-mounting solutions), Siebert (public display solutions) and Afore (budget range) – plus other developments from its principal supply partners.

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

E44

Powering up: Power-One micro-inverter units are among the products Sibert Solar will be exhibiting for the first time at Solar Energy UK 2013

Clever box

Emlite is inviting visitors to come and see the latest in MID approved smart energy metering as well as other exciting energy management products from its stand – E14.

With its modular metering platform, Emlite says it has developed one of the largest ranges of smart metering solutions available today. Whether your needs are for basic manual data collection or full automatic meter reading, Emlite aims to have a metering solution for you.

E14

Number crunching: Peterborough-based smart meter manufacturers Emlite says it has a solution for all metering needs

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Enphase Energy is **the world leader in microinverter technology.** Our recently enhanced Enlighten software platform provides solar professionals and system owners with operations and uptime assurance.

Enlighten Manager offers industry-leading, web-based tools to monitor and manage multiple installations.

For system owners, **MyEnlighten** provides an engaging solar experience where they can view and share energy production on any internet enabled device, including tablets and smart phones.

Find out the latest at
enphase.co.uk/enlighten

enphase ENERGY

The simple life

Enphase Energy, explains why the company's new Enlighten monitoring platform is about to make life a whole lot easier for PV installers and system owners

Not all PV systems are made equal. But thanks to its industry-leading technology, Enphase Energy delivers an intelligent high-performance solar PV array. And it enables a completely networked system that consists of three advanced components, microinverters, Envoy Communications Gateway and the new Enlighten monitoring platform, that work together to make solar significantly smarter, safer, more productive and reliable than traditional string and central inverter-based systems.

Enphase Microinverters maximise the production of each solar module and convert the direct current (DC) power from the panel into standard alternating current (AC) electricity, overcoming the issue of a single point of failure in standard string inverters. Each module and microinverter becomes an individual unit that operates independently within the solar array. This offers greater energy harvest and superior opportunities in terms of design flexibility, in addition to simplified and faster installation, accommodating different roof planes, pitches or rooftop obstacles.

The Envoy Communications Gateway collects energy production data from the microinverters in the solar array over the existing electrical wiring and sends data over the internet to Enlighten. Enlighten is an advanced web-based software platform which, unlike conventional monitoring systems that only check the inverter, continuously monitors the health and performance of the entire array, remotely; 24-hours a day.

Intelligent thinking: According to Enphase, the company's microinverter products, including the M215, can be combined with the Enlighten Manager and MyEnlighten software packages to create smarter and more productive systems

Intelligent thinking

Monitoring needs are not equal – personalisation and differentiation are increasingly called for and required by solar PV professionals and system owners. For this reason, Enphase recently introduced different user experiences within the Enlighten platform, named Enlighten Manager and MyEnlighten.

Enlighten Manager is the ideal toolbox designed for solar PV professionals, which streamlines the operations and maintenance processes and enables efficient management of multiple Enphase systems. It offers expanded capabilities, including views of detailed performance data from a fleet of PV installations down to an individual module, and provides sophisticated web-based software tools to monitor activations in process as well as existing installation management. It communicates when something goes wrong in the array and allows for remote diagnostics of performance issues. It also makes remote fixes possible and helps best determine whether an unplanned truck roll is necessary. Finally, it provides data to back up panel warranty claims, compares actual system performance data against modelled performance data and it allows access to facts and figures for reports 24/7 with secure, backed-up online data storage.

High performance

While Enlighten Manager is for PV professionals, MyEnlighten is specifically designed to be very user friendly for system owners. It represents the overall system health, provides at-a-glance performance verification and gives the information necessary to ensure the system is performing as predicted. Optimised for computers, tablets and smart phones, MyEnlighten connects owners to their solar system

Ease of mind: The Enphase Enlighten Manager and MyEnlighten software packages have been designed with simplicity in mind for installers and system owners wanting to monitor PV systems

through an engaging easy-to-use interface that displays energy production, system health and environmental benefits. System status indicators tell when the system is not performing as expected and what can be done to restore performance. It is easy to compare current performance against a previous day, week or month or view historical weather data to understand variations in energy production. And to those owners that are plugged in to social networking, MyEnlighten also offers a more social experience: thanks to the integrated social media buttons, one click will share the solar system, with its data and images, to the virtual world of Facebook, Google+ and Twitter.

Overall, the Enlighten monitoring platform provides an additional layer of intelligence to the solar PV system, overcoming the restrictions and limitations that affect the traditional monitoring software offerings and assuring a more productive system. It allows increased control of the solar array, with clear and tangible benefits to those who install, and an unparalleled connection to what's happening on the roof to those who own the system.

Supply & demand

Despite many of the commercial RHI tariffs looking certain to increase from 2014/15, **Tim Minett**, chief executive of CPL Industries, says more could have been done to stimulate deployment for the under-subscribed scheme

With the government counting on the heating sector for 40 per cent of the carbon emissions savings it needs to meet its binding 2020 targets, the launch of the Renewable Heat Incentive (RHI) in 2011 was the instrument designed to deliver this objective.

When the government first mooted the RHI it sounded like a winner. Backed by £860m, it offers businesses – and from next year homeowners – the opportunity to secure their energy future, lower their fuel bills and open up an additional revenue stream.

Although the scheme covers a range of renewable technologies from solar thermal systems to ground source heat pumps, biomass boilers always looked likely to be the most popular. This is due to the ease with which they can be retrofitted, the simplicity of use and their ability to work in all weather conditions. That has indeed been the case with biomass accounting for 90 per cent of all RHI installations.

Pay back

As boilers can be paid off in just a few years, business owners and financial directors should be clamouring to get involved. This is especially true for those replacing oil boilers, as rising oil prices mean returns on alternative technologies are better today than they were when the RHI launched.

Yet the overall scheme is currently significantly under-deployed compared to predictions, forcing DECC to launch a consultation into increasing several of the tariffs back in May. Despite high levels of enquiries, many interested companies have ultimately decided not to take the plunge. This was partly due to a series of delays getting the scheme up and running but primarily, as we have long argued in conversations with DECC, that the tariffs for medium and large installations were set at the wrong level to motivate change on the scale the scheme was set up to achieve.

Doubling the large-scale biomass tariff to 2p/kWh does not go far enough

Doubling up

DECC listened and revised the tariffs for large-scale biomass installations (over 1MW), suitable for major users of heat such as hospitals, which were set too low following European intervention. Doubling the tariff to 2p/kWh, as announced in May, does not go far enough. The large-scale tariff needs to increase to 3p/kWh to incentivise investment between 1MW to 3MW and to stop widespread under-sizing (to below 1MW) in order to secure higher tariffs. Under-sizing has caused the medium scale band to be artificially oversubscribed – leading DECC to cut it by five per cent.

What isn't factored into the tariff calculations at present is that large biomass installations of between 1MW to 3MW typically require multiple, rather than single, boilers. Companies considering installing that much capacity have to invest in reasonably-expensive upper medium band boilers, often with complex and costly ancillary installations, yet receive a lower level of RHI tariff. A 2p/kWh tariff isn't sufficient to stimulate this size of installation; however 3p/kWh still represents good value against other technology tariffs.

Likewise the medium-scale band tariff – which covers everything from 200kW to 1MW – does not encourage installation of systems below 500kWh. This band should be divided into an upper and lower medium biomass band, with the latter attracting a tariff of 7p/kWh.

Price cut: Tim Minett, chief executive of CPL Industries, has criticised DECC's decision to reduce the medium-sized biomass tariff under the commercial RHI having effectively stimulated demand for the technology

Deciding to cut the one area of the scheme that is performing well is counterproductive

DECC needs to understand how these nuances, and the issue of under-sizing, are affecting uptake. When other technologies have not yet been significantly deployed, deciding to cut the one area of the scheme that is performing well is counterproductive. Sadly, this confused picture is in keeping with much of the RHI's history and is frustrating for manufacturers, installers and suppliers alike.

Wooden delivery

Dick Stephens, Euroheat, explains why biomass is the best solution for retrofit customers looking to maximise returns under the domestic RHI

The domestic RHI looks good for end users and therefore means more business for suitably trained installers. We were pleasantly surprised to see a cash back rate of 50 per cent higher than anticipated, which stacks up for some pretty impressive returns. As an example, our Euro 45 kW boiler will earn £6,253 a year, giving a total pay back over the RHI's seven year inflation-linked lifespan of up to £46,000.

The customers for whom biomass is best are those in bigger, older properties. For a brand new two bed home, an air source heat pump may be the best choice and will provide the end user with a reasonable return. In larger, period houses, however, heat pump technology becomes unsuitable due to the low power output of the systems, whether ground or air source.

Apart from the cash back, there's the fuel savings, particularly for those switching from oil. Many home biomass boilers will be log fuelled – the cheapest type of wood heating. Fuel for a large log boiler costs about £700 a year if bought in bulk, with the equivalent oil system consuming around £3,500. For end users with access to their own wood supply, the savings are even greater.

As far as Euroheat's concerned, it's a great time to be in the biomass business. We've already experienced a boost thanks to the commercial version of the RHI – 99 per cent of the renewable heat developed in RHI accredited sites uses biomass – what we need now is suitably trained installers to help meet the demand.

Quids in: According to Dick Stephens of Euroheat, homeowners could see up to £46,000 pay back with some biomass products under the domestic RHI

Speke easy

Andrews Water Heaters, part of Baxi Commercial Division, has supplied a solar thermal water heating system to provide domestic hot water for the new Speke Neighbourhood Health Centre in Liverpool.

Located adjacent to the original health centre, the new building provides significantly larger premises, offering a vastly improved range of services including diagnostics, dental services, chiropody and smoking cessation, in addition to traditional GP surgeries and clinics. Developed by Liverpool and Sefton Health Partnership, which brings together both public and private sectors, the building has been designed to a high environmental standard. With a smaller carbon footprint than the previous building, despite being three times its size, the new building has attained a BREEAM rating of Excellent thanks to a range of sustainable technologies providing a total of 20 per cent renewable energy.

The building services were designed by Hulley & Kirkwood, which selected the energy efficient systems to satisfy the client's sustainability charter, comply with Building Regulations and achieve the highest possible BREEAM score.

Andrews' SOLARflo solar thermal water heating system was selected by the consultancy which said: "Andrews Water Heaters has a good name within the commercial sector for delivering energy efficient services that are competitively priced, and this equipment provided the solution we required for the building."

Twelve glazed flat plate solar panels are located on the roof of the building, above the plantroom, with the storage cylinder and other components of the system housed within the main plantroom below. Water heated by the panels is transferred to a 1500 litre, twin coil, unvented storage cylinder which provides for additional water heating via a secondary coil served by a condensing boiler.

The system serves approximately 78 outlets located over the two floors of the health centre, comprising wash hand basins, sinks and showers in consulting rooms, treatment rooms, changing and toilet facilities, utility rooms and beverage bays. The SOLARflo equipment was installed by Strong Group with a spokesman adding: "The equipment is very user friendly, very good quality and, as long as the building is constructed with the installation in mind – in particular the roof and its ability to support the solar collectors – it is a fairly simple installation process and one we will definitely use again."

Andrews' SOLARflo collectors are designed to provide 90.8 per cent transmission efficiency, 95 per cent absorption efficiency and a low emission loss of only 5 per cent. In addition to the glazed flat plate solar collectors and stainless steel solar cylinders, the Solarflo package also includes solar controls, pump station, expansion vessels, first fill of heat transfer fluid and collector mounting accessories. SOLARflo glazed flat plate collectors are Solar Key Mark Approved and carry a 10 year guarantee.

Warm reception: Speke Neighbourhood Health Centre in Liverpool used moving to new premises as an opportunity to create a BREEAM Excellent rated building, including solar thermal heating

At a glance – Speke Neighbourhood Health Centre

12 x glazed flat plate solar panels
1500 litre, twin coil, unvented storage cylinder
90.8 per cent transmission efficiency
95 per cent absorption efficiency

Excellent BREEAM rating

Phoenix rising

A plastic manufacturing business in Goole, Hull has become one of the latest companies to embrace microinverter technology to maximise the benefits solar PV can offer.

The opportunity to reduce electricity bills is a real incentive behind many decisions to install a solar array, especially for businesses with high energy usage.

The installation site, however, provided several problems. The area was split over two roof surfaces, with variable shading threatening to disrupt the efficiency of the whole system.

Bright idea: Enphase microinverters were combined with a 19.5kW commercial installation in Goole to overcome variable shading

A problem solved

In order to provide a solution to this problem, Leeds-based PV installers The Phoenix Works turned to Enphase Energy's microinverter technology. Using a microinverter was deemed the best solution to this problem by ensuring that the reduced performance of a few panels would not affect the overall array. Add to this Enphase's Enlighten monitoring portal and twenty year warranty and the client was happy with the outcome.

The Phoenix Works installed a 19.5kWp array comprising of 78 Phono Solar 250Wp polycrystalline modules across two separate roofs. By combining this installation with Enphase microinverters, the aim was to provide the client with a viable and efficient solution.

A successful outcome

Despite the challenges posed by this site, the customer reported an instant reduction in grid energy consumption. Following on from the installation's success, the customer has even asked for a quote from Enphase to retrofit his residential solar installation with microinverters.

Heaven sent

SolarTech has installed over 200 solar panels at Northampton Saints Rugby Club, making it one of the most sustainable and energy efficient major sports stadiums in the UK.

This initiative will not only improve the Saints' carbon footprint but, by generating its own free energy, the club will also significantly reduce the costs of powering its Franklin's Gardens stadium, training ground and administration offices.

Each of the arrays is expected to generate 50kWp of free electricity under peak operating conditions, which will amount to over 48,850kWh of electricity every year, resulting in approximately £3,500 in annual energy savings. The club will also benefit from an income of £5,300 per annum from the Feed-in-Tariff incentive scheme for the next 20 years.

Energy kick: Northampton Saints Rugby Club has boosted its green credentials with a 50kWp array at the club's Franklin's Gardens Stadium

As the principal contractor, SolarTech was responsible for providing all the designs and calculations, installation and commissioning of the system within a concentrated two-week timescale.

"We are delighted to have been involved in this landmark project, which clearly demonstrates the growing importance of renewable energy in the world of sport," said Shaun Taylor, managing director of SolarTech.

"Roof mounted solar schemes in stadiums offer low visual impact whilst providing enormous environmental and economic benefits to the clubs and wider community."

Chief executive of Northampton Saints, Allan Robson, added: "In an era when electricity prices are continuing to rise, looking into alternatives, which generate renewable energy is something which makes a lot of sense. These panels have been installed with a long term view and we're very happy to be reducing our carbon footprint in the process."

Taking the lead

One year on from installation of solar at PTS House, Ian Stares, director for renewables and sustainable energy products at **PTS**, discusses the results achieved at the merchant's head office and why it's important to make these statistics public

Actual cost savings, backed by solid figures, are essential if installers are to be convinced that renewable technologies can provide an added value service which will benefit their business as well as the pockets of homeowners and businesses.

It's clear to me that installers need solid evidence that these products do deliver what they promise, so they can be confident about approaching domestic and commercial customers who simply want to make savings on their energy bills.

Solar gain: PTS aims to educate PV installers on real PV generation figures through its own array at its Northamptonshire head office

Shining a light on solar PV

Demonstrating our own belief in renewable energy technologies is important to PTS which is why, one year ago, we installed solar panels at our head office in Crick, Northamptonshire. A solar PV system consisting of 120 250kW panels was installed, along with a number of other energy efficient solutions.

In addition to installing these products, we believe it's crucial to share the benefits with installers who might be questioning the need to begin specifying these products.

Initial payback figures from the solar PV panels were calculated in June 2012. Of course, the results will differ depending on individual circumstances and weather conditions. It's also worth noting that these numbers are taken from a large commercial building rather than a domestic residence where lifestyle and behaviour would have a different impact on energy consumption. However, the initial figures provide a compelling business case in favour of renewables.

PTS House has a metal roof that is trapezoidal in shape. Initial work was carried out to assess the south facing rear roof and to determine its physical dimensions which were found to be suitable for a solar PV array of up 30kW.

The system installed was a 30kW solar PV system with a Solar Edge inverter which converts DC to AC electricity. This inverter was essential to compensate for shading on one part of the roof and ensures a high level of efficiency.

Estimated bill reduction

PTS House has a floor space of 16,166 ft2. The final calculation used a typical factor required for commercial offices consuming electricity from two independent sources: Association for the Conservation of Energy (ACE) using the standard office parameters and the Department of Environment (DoE). Using the above factors, a typical electricity consumption profile was developed for PTS House (without solar PV). The solar PV contribution was estimated to offset the total electricity consumption by around 8 per cent.

Estimated and actual revenue

The estimated annual energy generated by the solar PV panels was 26500 kWh. This is increased from a 'standard' panel with 'standard' inverters which would generate approximately 25000 kWh with optimum weather conditions.

With the Feed in Tariff at 15.2p/kWh the amount generated at PTS House per annum was £4,028.

Additional export back to the grid at 50 per cent was 13,250 kWh totalling £397.50.

Therefore the total revenue generated by the solar PV was estimated to be £4,425.50 in year one which points to an impressive payback period of less than ten years when taking the degradation of the panels into account.

A bright future

Although the solar PV system at PTS House is at a relatively early stage in its life and ongoing performance will be dependent on weather patterns, early results are encouraging. Without a doubt the project has been a success, not only in terms of payback and savings and but also by demonstrating the crucial role of renewable technology as part of a structured low carbon approach.

At a glance – PTS House

16,166 ft² floor space
30kW PV system
120 x 250kW panels
Solar Edge inverter
Contributes 8 per cent of total building electricity consumption
£4,028 annual Feed-in Tariff income
£397.50 annual export tariff income

Forestry commission

A forest holiday village is embracing green energy after opting to heat its guests and provide hot water fuelled by biomass.

Equipped with Torrent GreenHeat open vented thermal stores from Gledhill, the new Forest Holidays site at Blackwood Forest in Hampshire comprises 60 luxury woodland cabins set within a 270 hectare beech forest.

Each of the 1, 2, 3 and 4 bedroom cabins is equipped with a Torrent GreenHeat, fuelled by a pellet-fed biomass boiler located in an external enclosure, with each boiler feeding into two properties.

The Torrent installation was carried out by Sinclair Heating based in Scarborough. The company's director Phil Rank said: "We looked at a number of systems but decided on the new Torrent unit because it offered high performance and would supply heating and hot water. Importantly, Gledhill's unique manufacturing service at depots across the country enabled us to specify the addition of two 3 kW electric heating units on Torrent so that if there was at any time an issue with the boiler system, the Torrent could still provide both heating and hot water as a self-contained back-up system.

"Forest Holiday Villages are hugely successful and enjoy high occupancy levels so it is vital that heating and hot water is always available."

Phil added: "The fact that there is no requirement for discharge pipe work on Torrent GreenHeat, removing the need for G3, was another advantage in speeding up the installation process."

Phil and his team used the electric heating back-up to heat the properties during the fitting out stages, before the boilers were installed, and found the Torrent GreenHeat units performed well even during the arctic spell of cold winter early in the year.

The single storey 1-3 bed cabins are timber frame construction and benefit from advanced insulation and double glazing which means very little heat loss. All have underfloor heating driven by the Torrent GreenHeat thermal store which also delivers mains pressure hot water. The 4-bedroom cabins have additional radiators heating the upper floor. The Torrent primary store circulates water directly through radiators and underfloor heating.

Branching out: All 60 cabins at Forest Holidays, Hampshire, have underfloor heating driven by the Torrent GreenHeat thermal store which also delivers mains pressure hot water.

Mains pressure hot water is delivered via the plate heat exchanger linked to the primary store. That means domestic hot water for taps and showers is not stored water but instantaneously heated mains cold water, eliminating any risk of legionella contamination.

Forest Holiday Villages enjoy high occupancy levels so it is vital that heating and hot water is always available

Gledhill supplied additional copper 'low loss leader' pipework as a special provision for each boiler feed splitting between the two cabins.

Gledhill managing director, Jason Hobson, added: "Much of our manufacturing involves skilled copper fabrication so we were perfectly placed to manufacture and supply the special units the project required. Each of our 12 depots across the UK has its own skilled workforce manufacturing the Torrent GreenHeat units with the tappings and features specified by the installer so we provide almost a bespoke service for each unit – delivered within 72 hours from the order being placed."

Torrent GreenHeat has been developed as a solution for uncontrolled heat sources such as wood chip burners or log burning stoves because it is open vented. The unit is also designed to enable the economical use of multiple green energy sources including log burners, biomass boilers, solar thermal, and heat pumps alongside oil or LPG. Gledhill adds that the Torrent GreenHeat system uses the fossil fuel heat source only as a last resort, automatically prioritising renewable energy as the principal heat source.

RHI – How to communicate the benefits

Babak Daemi, managing director of Everlasting Marketing & PR Ltd tells REI why PR will play a big part in shaping the renewable heating industry

Now that DECC has finally given us the news we wanted regarding the domestic RHI, we the industry have a great opportunity to promote our products and services. However, as we have seen before with renewable incentives, the outgoing communication from the industry to the end-user can be confusing.

There are two main reasons the message can be confusing. One, because the potential reader often has no prior knowledge of the product meaning the message needs to be both informative and simple. The second is the message can often be too busy.

Marketing communications, especially press releases, can be overcrowded with the 'USPs of the company'. Of course, these messages all have their value, but if you try to communicate it all at once, the customer will become disengaged and stop reading.

It is also important to stay factual and be careful not to make false claims. Solar PV went from an unknown quantity to a much desired product very, very quickly. And although it is unlikely to be exactly the same for the renewable heating sector, there is a chance that companies will be looking to take advantage of RHI and the potential customers it will bring. What no-one in the industry wants is a bad reputation to undo all the hard work that has gone in to setting up the scheme.

The power of PR cannot be underestimated; a good press release will cut

through the noise caused by advertising and generate higher quality leads.

Everlasting Marketing & PR has an established reputation for working in the renewable sector. For a free assessment or marketing clinic visit the Everlasting Marketing and PR website.

Taxing times

Mark Chatterton, partner at Duncan & Toplis, discusses how best to advise clients on the tax implications of moving into renewables

When renewable energy companies are advising farmers and landowners on investing in green energy projects, it's important that they have all the facts at their disposal.

East Midlands chartered accountants Duncan & Toplis act for around 50 businesses that have invested in some form of renewable energy in the last two years; most have erected solar PV on buildings and a few have erected wind turbines.

Many of these have been agricultural businesses which have had good arable profits made from harvests 2010 and 2011 which have enabled them to carry out the investment without borrowing huge amounts. The most common purchase being for a 50kW solar array.

For accounts purposes the expenditure has been capitalised, usually in a separate category on the balance sheet entitled 'Renewable Energy Equipment'. We have decided to use a 5 per cent straight line depreciation policy which writes off the investment over 20 years in the accounts, although we know that the income is guaranteed for 25 years. The equipment itself may last a lot longer than 25 years but we feel it is prudent to fully write off in the accounts by year 21.

The tax treatment is more favourable, as the initial expenditure qualifies for the Annual Investment Allowance (AIA). Anything over the AIA is put into a special pool where tax relief is 8 per cent per annum.

The AIA was £100,000 per annum up to 31 March 2012, reducing to £25,000 per annum from 01 April to 31 December 2012. It then increased to £250,000 per annum from 01 January 2013, so any solar projects incurred this year should obtain full tax relief in year one. It is important to claim the AIA against the renewable energy equipment before claiming it against normal plant and machinery. This is because the tax relief on the plant and machinery pool is at 18 per cent per annum which is better than the special pool relief.

£250,000 of renewable equipment gets 100 per cent tax relief each year. Spreading the installation costs over two years will enable even more of the cost to get 100 per cent relief.

This obviously gives very good tax relief against other business profits in the first years of the project. However, the Feed-In Tariff income over the next 25 years will be subject to income tax. It should also be noted that AIAs cannot be claimed by all businesses, for example, any partnership with a limited company as partner. To clarify the situation you should check with your accountants.

Where businesses are erecting solar panels on its houses and outbuildings, care is needed to treat the expenditure and future income streams correctly.

Some clients have spent £100,000 on a 20kW wind turbine and others are spending up to £750,000 for a 330kW turbine. This will invariably involve borrowing money and banks are now looking more favourably at renewable projects than in previous years. A growing number of our farming clients are now leasing land to wind turbine companies or for solar parks. Again the tax implications need investigation as this will be unearned income in terms of the rental stream for the next 25 years. Others are looking at anaerobic digestion projects which again involves high initial capital but for a higher return.

Taxing matters: The substantial tax relief available for businesses investing in green energy should not be overlooked, says Mark Chatterton, partner at chartered accountants Duncan & Toplis

For installers requiring further advice on the financial and tax implications of renewables, Mark Chatterton can be contacted on **01636 640321** or **mark.chatterton@duntop.co.uk.**

Figure it out

Generation tariffs for non PV technologies

Technology	Band (kW)	Tariffs (p/kWh)
Hydro	≤15	21.65
	>15-≤100	20.21
	>100-≤500	15.98
	>500-≤2000	12.48
	>2000-≤5000	3.23
Wind	≤1.5	21.65
	>1.5-≤15	21.65
	>15-≤100	21.65
	>100-≤500	18.04
	>500-≤1500	9.79
	>1500-≤5000	4.15

(Source: OFGEM)

Number of MCS registered installers per technology

Technology type	Cumulative number	Registered July 13
Solar PV	3190	25
Biomass	262	06
Air source heat pump	862	13
Ground source heat pump	722	09
Solar thermal	1092	14
Small Wind	132	0
Total	3723	75

Number of MCS registered installations per technology

Technology type	Cumulative number	Installed July 13
Solar PV	456303	5932
Biomass	3110	68
Air source heat pump	17116	260
Ground source heat pump	5609	29
Solar thermal	4794	92
Small Wind	4040	21
Total	504002	6566

(Figures supplied by Gemserv)

Generation tariffs for Solar PV

Tariff band	FiT rate (p/kWh)
<4kW	14.90
>4-10kW	13.50
>10-50kW	12.57
>50-100kW	11.1
>100-150kW	11.1
>150-250kW	10.62
>250kW-5MW	6.85
Standalone	6.85
Export Tariff	4.64

Domestic RHI tariffs

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

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

Number of Green Deal assessments

Month	Assessments
January	74
February	1729
March	7491
April	9522
May	12146
June	13517
July	13645
Total	58124

(Source: DECC)

Cost comparison of heating fuels

Fuel source	kWh provided per unit of fuel	Efficiency of system (%)	Units consumed by house (kWh)	Price per unit of fuel (£)	Units consumed per annum	Cost per annum
Heating oil (kerosene)	10 per litre	90	25300	0.58 per litre	2530 litres	£1,467
Wood pellets	4800 per tonne	94	24300	245 per tonne	5 tonnes	£1,225
Natural gas	1 per kWh	90	25300	0.048 per kWh	25300 kWh	£1,214
LPG	6.6 per litre	90	25300	0.48 per litre	3833 litres	£1,840
Electricity	1 per kWh	100	23000	0.145 per kWh	23000 kWh	£3,335
*Air source heat pump	1 per kWh	290	7931	0.145 per kWh	7931kWh	£1,150
*Ground source heat pump	1 per kWh	360	6389	0.145 per kWh	6389kWh	£926
Dual mode system 1						
Oil boiler (30% of heat load)	10 per litre	90	7590	0.58 per litre	759 litres	£440
*Air source heat pump (70% of heat load)	1 per kWh	290	5552	0.145 per kWh	5552 kWh	£805
Dual mode system 2						
Gas boiler (30% of heat load)	1 per kWh	90	7590	0.048 per kWh	7590 kWh	£364
*Air source heat pump (70% of heat load)	1 per kWh	290	5552	0.145 per kWh	5552 kWh	£805

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

RHI non-domestic rates

Tariff name	Eligible technology	Eligible sizes	Tariff rate (pence/kWh)	Tariff duration	Reviewed tariff (proposed for 2014/15)
Small biomass	Solid biomass: Municipal solid waste (inc CHP)	Less than 200 kWth	Tier 1: 8.6 Tier 2: 2.2	20	No change
Medium biomass	Solid biomass: Municipal solid waste (inc CHP)	200 kWth and above, less than 100 kWth	Tier 1: 5.0 Tier 2: 2.1	20	No change
Large biomass	Solid biomass: Municipal solid waste (inc CHP)	1000 kWth and above	1	20	2.0
Small ground source	Ground source heat pumps, water-source heat pumps, deep geothermal	Less than 100 kWth	4.8	20	7.2-8.2
Large ground source	Ground source heat pumps, water-source heat pumps, deep geothermal	100 kWth and above	3.5	20	7.2-8.2
Solar thermal	Solar thermal	Less than 200 kWth	9.2	20	10-11.3
Biomethane	Biomethane injection and biogas combustion, except from landfill	Biomethane all scales, biogas combustion less than 200 kWth	7.3	20	No change

(Source: OFGEM)

RHPP Phase 2

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

Applicant must also undergo a GreenDeal assessment in order to qualify

What data would you like to see on this page?

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Knowledge: Case studies

BIOMASS

What: Grade II listed building replaces traditional heating system with biomass

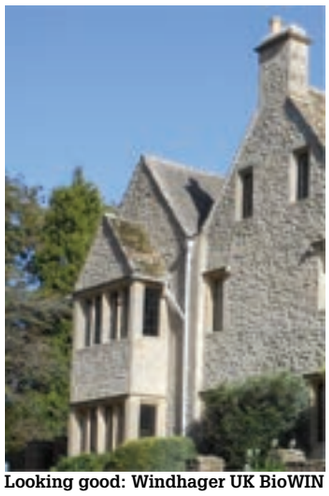
How: Three Windhager 60kW BioWIN wood pellet boilers

Result: Carbon neutral heating and hot water supplied to manor house, estate cottage, stables and swimming pool

A Grade II listed building situated in the heart of the Cotswolds has been restored to its former glory, enhanced through the introduction of modern technologies. The manor house has recently benefited from the replacement of the heating system with energy efficient biomass boilers, provided by Windhager UK.

The Windhager boilers allow the property to utilise the latest in renewable technologies and yet retain its integral design and architectural quality. The boiler system is bespoke, catering specifically for a building of this size and complexity, offering a carbon neutral solution to heating and hot water.

The Windhager boilers replace an older oil-fired heating system with three 60kW BioWIN wood pellet boilers providing all heating and hot water for the manor house, estate cottage, stables and swimming pool. Within the house, the system serves underfloor heating to the ground floor areas and bathrooms. The customer is reportedly delighted with the installation, which will considerably reduce the energy costs at the manor house and will increase the internal comfort of the building through maintaining a constant temperature.



Looking good: Windhager UK BioWIN wood pellet boilers now supply heating and hot water for the manor house, estate cottage, stables and swimming pool at an attractive Cotswolds Grade II listed property

Director of the project's installers Greenoak Building Services, Ben Gibbons, said: "Having installed biomass boilers supplied by numerous manufacturers over the past ten years, we believe Windhager to have one of the best products on the market. It is clear that their commitment to product development and manufacturing quality is high on their list of priorities as a company. The staff at Windhager UK are very helpful and have extensive knowledge of the products and their application."

WIND

What: Scottish Water powers water treatment works with wind

How: Three Evance R9000 small wind turbines

Result: 55MWh of clean electricity generated per annum

Evance has commissioned three R9000 small wind turbines at Scottish Water's water treatment works on the island of Stronsay in Orkney.

Due to the grid connection limitation, Evance has installed the R9000 Grid+ system, so enabling the maximum energy from each 5kW turbine to be captured and used, while only allowing 3.68kW to be connected to the grid, so complying with the requirements of G83.

"Stronsay has a great natural wind resource so, by installing our Grid+ system, Scottish Water is able to harness this renewable energy for use at the water treatment works. The three turbines will be able to generate around 55MWh of electricity a year, which will mean nearly an 80 per cent reduction in the energy costs of running the works," said Tim Sammon, director of Evance Wind Turbines.

"We have a few hundred turbines installed on the Orkney Islands. These customers have turned to Evance as the R9000 has proved its reliable and continuous operation in all the wind conditions experienced on the islands," he added.

Eddie Johnstone, project manager with Scottish Water's Energy Team, said: "At Scottish Water we continue to pursue opportunities to deliver best value by developing renewable energy. Our Stronsay wind project is another example of just that. It will mean a dramatic reduction in the need for purchasing electricity – so reducing the overall cost of running the works."

Absolute power: Evance says its Grid+ system enables maximum energy capture whilst allowing only 3.68kW to be transferred to the island of Stronsay's limited grid connection

SOLAR PV

What: Wiltshire chutney makers switches to solar powered production

How: 82kWp rooftop array installed by Solarsense

Result: 69,000 kWh clean electricity a year

Traditional chutney and preserves makers Tracklements has switched to solar power to help make its award-winning range of more than 60 products at its Wiltshire factory.

The company, which is well-known for producing the UK's first wholegrain mustard and the popular English Onion Marmalade, turned to Solarsense, to design and install a solar power plant.

Tracklements expects the 82kWp rooftop array to produce more than 69,000 kilowatt hours of free electricity every year and shrink its carbon footprint by over 36 tonnes.

Becky Vale from Tracklements said: "We decided to generate our own clean electricity because we wanted to reduce both our operating costs and our impact on the environment. The new system is working really well and we're very pleased with it."

The installation is the first project in a line of planned environmental improvements for the Malmesbury factory that could include its own wastewater treatment plant and a biomass boiler.

Steve Barrett of Solarsense added: "Many more businesses are following Tracklements' lead and choosing to install renewable energy generators such as solar panels, biomass boilers and heat pumps. Renewable energy on a large or small scale can help reduce their carbon footprint as well as their costs and also protects against future energy price rises."

ANAEROBIC DIGESTION

What: North British Distillery wins national recognition for anaerobic digestion

How: £6m HydroThane External Circulation Sludge Bed

Result: Annual CO2 reduction of 9,000 tonnes and daily biogas production of up to 24000 MWh

North British Distillery and HydroThane UK have won the AD & Biogas Award for best integration of AD into a food and drink business for an AD project at The Edinburgh Scotch whisky grain distillery, which supplies famous brands such as Famous Grouse and Johnnie Walker Black Label.

The £6 million green technology project has reduced the distillery's carbon dioxide emissions by approximately 9,000 tonnes per year, which equates to the annual carbon saving benefits of a 7,377 acre forest, or removing 3,000 cars from the road.

The project introduced high rate anaerobic digestion to help the company provide a sustainable solution to a bottleneck in the back-end production process.

Instead of investing in additional energy intensive evaporation capacity to process the liquid by-products from the distilling process, a decision was made to install an anaerobic digestion plant.

By using HydroThane's ECSB (External Circulation Sludge Bed) AD technology to process a third of the post distillation liquor, the company has reduced the load on its existing energy intensive evaporation plant – increasing productivity while reducing energy demand.

The AD plant is designed to treat 27,000Kg of Chemical Oxygen Demand (COD) per day and produces up to 24000 MW hours of clean energy in the form of biogas.

A high efficiency 500kW ENER-G CHP system and a 1000kW steam boiler convert the biogas into steam and electrical energy for use on-site reducing the distillery's reliance on fossil fuels.

David Rae, managing director of North British Distillery, said: "By reducing our carbon footprint we are contributing significantly to the Scotch whisky industry's global target of sourcing 80 per cent of its energy needs from renewable sources by 2050."

High spirits: North British Distillery's £6m AD unit not only produces clean energy but also processes a third of liquid by-products from the site

My working week

Who: Bob Brusselen, installation manager, Windcrop

What: Based in Norfolk, Windcrop claims to be the country's largest FiT registered installer of small-scale wind turbines

Trading places: Bob Brusselen, installation manager at Windcrop, says planning and organisation is key to servicing an area from Essex to Yorkshire from the company's Norfolk base

Gone with the wind

Monday
For the third year we set off to the Suffolk Show in Ipswich to install one of our 5kW, 15 metre high turbines in order to demonstrate how wind power can provide free green electricity for the agricultural industry. We teamed up with Tuckwells, the UK's largest John Deere dealership, to power its stand enabling us to bring wind power to life for those visiting the show. Whist the mounting piles were being driven into the ground, the mast fitters were building the base of the mast. When the piles were in place, the base of the mast and supporting legs were attached, the two end sections fitted to the mast base and the turbine built on the end of the mast. We simply winched the mast into its upright position and levelled it, a process which does not require us to use heavy plant.

Tuesday
This morning we were scheduled to visit one of our turbines installed in March last year to conduct a regular maintenance check. Setting off from the yard in Honingham, Norfolk, at about 7.30am, we arrived at the site at 9am. As the system mast is on a winch it's easy to lower down and surprisingly only takes two operatives to do this. We brought it down, removed the plastic housing so we could access the inner workings, then checked the pitch settings on the blades and greased all the component parts. This particular set of three turbines had been performing really well – collectively generating almost 30,000 KWh in just over a year. The customers were happy with the savings they were seeing on their electricity bills and we were happy to be given a bacon butty for our morning's work.

Wednesday
Today we faced several challenges while installing a turbine in Yorkshire. As we started driving the piles into the ground we really struggled with one due to the land being so hard and so we had to move it several times. As Windcrop has expanded into the north of the country, the land is obviously very different and so to overcome this, the company that supply the piles, ABC Anchors, has had to modify them to use a 16,000 newton metre torque head. Other difficulties we are faced with include the extreme weather whilst gaining access to sites can sometimes be tricky in rural hillside locations.

Thursday
This day was dedicated to being in the office and catching up on paper work. I spent the day speaking with customers and arranging to go out to any potentially problematic sites. Scheduling is really important so we can get ourselves organised for the coming days, as we cover an area as far down as Essex and up to Yorkshire.

Friday
We spent most of today collecting wind speed data, which is mainly used for our own research purposes. We took a trailer with a thin mast and two hydraulic sections which can be jacked up into the air at the required height to record wind speeds; ours is 15m – the height of our turbines. We then use an anemometer, connected to a laptop, to retrieve all the statistics. It just takes a couple of hours to put up and then we leave it overnight. We can then use these numbers to calculate an average wind speed and compare that with the data we are given by the Carbon Trust to make sure it is as accurate as possible.

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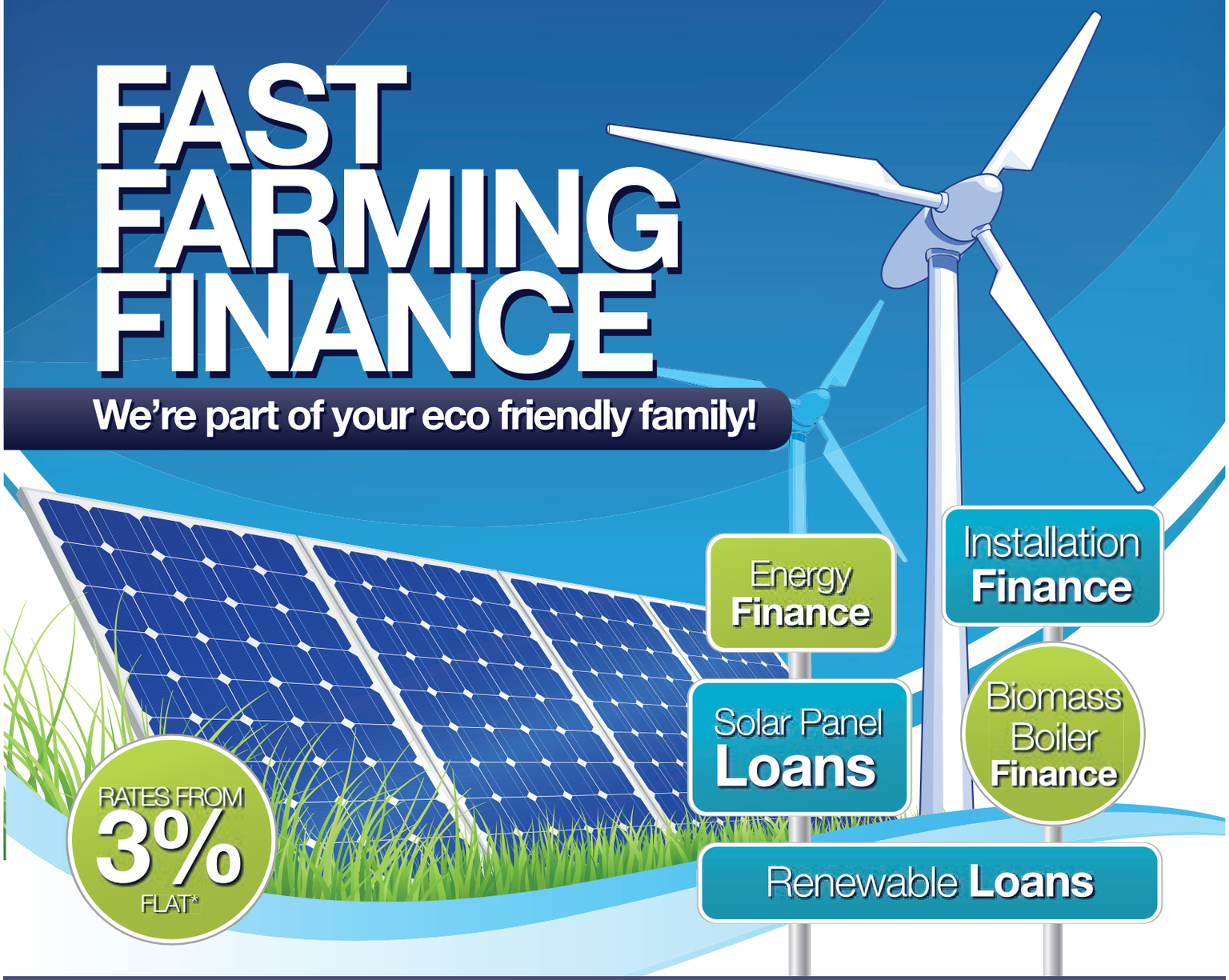

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