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The edge of glory

So spring has finally arrived and with it the promised launch of the domestic RHI.

At the time of writing, no date has been officially confirmed other than a pledge by Greg Barker on Twitter that news will arrive no later than Easter Day, on April 20.

Somewhat conveniently to the written press, the introduction of such a transformative scheme lends itself nicely to a whole host of seasonal clichés including 'rebirth', 'renewal' and 'rejuvenation' – from which I will spare you. Needless to say the sector has been primed for some time for rapid expansion once we hear the starting gun.

The excitement and anticipation I refer to is not simply blind faith or misplaced hope either. From speaking to many of you at Ecobuild, which itself defied doom-laden predictions to register a modest increase in visitor numbers on last year, the age of consolidation is evidently now over as installers prepare for increased demand for renewable heating systems.

Closer to home, spring has also proven to be a fruitful time for REI now that the Energy Efficiency & Renewables Awards have been taken under our wing. Originally conceived by Dan Caesar, already a well-known face to many readers, we will work closely with him and his company Energise to bring you the awards this autumn. I encourage you to put forward your company now that the nomination period has begun.

This is an exciting time for REI and indeed the industry as a whole. Further details will be announced in due course so please watch this space.

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B&ES survey finds economic recovery in full swing

Research carried out by the Building & Engineering Services Association (B&ES) indicates an improving market outlook for its members

More firms acknowledged an increase in orders and enquiries during the second half of 2013 compared with six months previous, while half reported a rise in turnover levels.

Member optimism regarding future prospects was also seen to have recovered – while the number of firms recruiting apprentices and trainees rose modestly during the period.

The research also revealed that levels of both direct employment and the use of agency labour had risen and that these trends were likely to continue during the next six-month period.

Chief executive Roderick Pettigrew pointed out that this was the second successive B&ES survey to have painted a relatively bright picture of prospects across building engineering services and, by implication, the construction industry as a whole.

"Encouragingly, our findings appear to be in line with those of other surveys carried out recently in adjacent sectors, which taken together provide evidence of a sustained, if still modest, process of recovery," said Mr Pettigrew.

He added that the collection of market statistics was of key importance to industry as it enabled individual firms to benchmark their performance against the sector as a whole – and that the findings of the B&ES survey would be used by the Confederation of British Industry in respect of its own pan-industry research.

Closing the gap: The health of the UK building sector is moving much closer to pre-recession levels, says B&ES chief executive Roderick Pettigrew.

Act now on renewables or destroy landscape, says UFW

Renewables distributor UFW has warned that a 'decisive, joined up approach' is needed by government if the nation's economy is to survive repeat episodes of the extreme weather which flooded the Somerset Levels this winter.

Damage limitation: Greater investment in green energy would mitigate the UK against the effects of extreme weather events as seen this winter, says UFW

UFW's sounding of the alarm mirrors Labour leader Ed Miliband's recent comments that the UK is 'sleepwalking to a crisis over climate' and that a 'political division in Westminster' is preventing the UK from taking appropriate action.

The Leicester-based company stresses that with scientific evidence for human-induced climate change now irrefutable, and the likelihood of extreme weather events increasing as carbon emissions continue to rise, the government must do more to increase the proliferation of renewable energy.

"The public perception of climate change is altering, and the general consensus is that this is now a very real threat to our livelihoods and our homes," said UFW's business development advisor, David Taylor.

"To some, a wind turbine is a blot on the landscape; but the reality is that without significant investment in green energy solutions our landscape will be destroyed regardless."

He added: "Evidence suggests that carbon dioxide is at its highest level for 800,000 years and it is vital that we look to de-carbonise as rapidly as possible to minimise the impact of climate change. But we also need to invest in infrastructure, flood defences and well-equipped emergency services to deal with the inevitable consequences of the more frequent, severe weather events that experts are predicting."

Events

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

Large Scale Solar Conference
29 April – 01 May Kelham Hall, Notts
http://largescale.solarenergyevents.com/

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

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

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

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

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

Energy Efficiency & Renewables Awards
Autumn 2014

Domestic RHI update

The waiting game is almost over for the domestic RHI with a launch date for the scheme expected imminently. Regulations and legislation were due to be debated in the House of Lords on 26 March and in the Commons on 02 April. Climate change minister Greg Barker has confirmed via social media that the scheme is on schedule to launch by Easter (20 April).

Industry slams budget for costing the earth

Leading figures in the renewables sector have hit back at the chancellor's budget announcement on 19 March for failing to put the environment before short term economics.

Supporters of the budget heralded the decision to freeze the Carbon Floor Price (CFP), a key mechanism introduced to incentivise companies to curb carbon emissions and consider greener alternatives, as good news for UK businesses struggling with the cost of energy.

Critics say this will jeopardise investment in renewable energy by sending a signal of support to fossil fuel polluters.

Under original proposals, the CPF would have increased to almost £30 per tonne by 2020. Chancellor George Osborne has now pledged to freeze the CPF at £18 per tonne in 2016/17 until the end of the decade.

REA chief executive, Dr Nina Skorupska, said: "By freezing the Carbon Price Floor, the chancellor is rowing back on his own policy and once again moving the goalposts for investors in green energy. Government must explain in black and white how investment in renewables is protected from the freeze, or risk undermining the investment required to replace ageing coal power stations with technologies that can keep the lights on without damaging the climate."

RenewableUK's director of policy, Dr Gordon Edge, said: "By freezing the CPS there will inevitably be a squeeze on the pot of money set aside to support renewables – the Levy Control Framework. This will limit the government's room for manoeuvre as it strives to meet its 2020 renewable energy target.

"The UK's wind, wave and tidal energy industries need stability, certainty and confidence. That's why the announcement on the CPS sends an unwelcome message to our sector, and represents a missed opportunity for some of the UK's most forward-looking new industries."

Energy Efficiency & Renewables Awards 2014 nominations now open

Nominations are now open for this year's Energy Efficiency & Renewables Awards. Celebrating the very best in industry, the search is now on for a successful and innovative company, product or individual in 15 categories. Nominations will close on Monday 30 June.

Brought to you for the first time by Renewable Energy Installer magazine and Energise, the annual awards will take place this autumn at a central London venue to be confirmed.

Energise managing director Dan Caesar said: "These awards are the highlight of the renewables calendar and will once again showcase the success stories and excellent work being done by the industry.

"Every year the standard of entries has risen higher and higher with 2014 looking set to be as competitive as ever. Delivering unrivalled national exposure and recognition, we are looking forward to an even better awards."

2104 award categories

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

To request a **nomination** pack or for **sponsorship** opportunities, email Team@EnergiseEvents.co.uk or phone + 44 (0) 1565 626760

Brighter future for rural Africa

This month SolarAid is celebrating a major milestone for solar in Africa. Its social enterprise, SunnyMoney, has sold one million solar lights to rural families living off-grid; bringing clean safe lighting to homes for the first time

This not only means that over five million people are benefitting from free renewable power. The rate at which the enterprise's sales have grown confirms what we might all expect; that a solar market has its place in Africa.

SolarAid aims to tackle both poverty and climate change by eradicating the kerosene lamp from the continent by 2020. That may seem an ambitious goal but on a continent where 600 million people have no access to electricity, Pico-solar products are proving a popular alternative to their fossil-fuel counterparts.

In sub-Saharan Africa 91 percent of the rural population do not have access to electricity. When darkness falls millions of families depend on costly, polluting kerosene to light their homes. Burnt in a homemade tin lamp, the flame emits a thick black smoke damaging a family's health as well as the environment. It is expensive, accounting for around 20 percent of household income, and barely emits enough light for a child to study.

SolarAid does not give solar lights away. Rather, they sell them at a full but fair market price through its social enterprise, SunnyMoney. This trade not aid approach aims to catalyse a sustainable market for solar products. In remote rural African communities, with little infrastructure and poor retail networks, the sale of solar products is challenging. Funded by SolarAid, the social enterprise creates demand for lights by educating teachers about solar power to create community awareness and provide a channel through which they can be brought to small towns and villages. In 2013 this community distribution strategy won several awards – from The Guardian, the Google Global Impact Challenge and Ashden – for both its innovation and impact.

Life lessons: SolarAid creates demand for solar lights in rural Africa by educating teachers to share the benefits of switching away from Kerosene with local communities

Fighting poverty: SolarAid has now sold 1m solar lights to homes throughout Kenya, Malawi, Tanzania and Zambia improving the financial, physical and environmental health of sub Saharan Africa and its people

Once demand is created local agents can begin to stock, sell and profit from the sale of solar products and become permanent retailers in their communities. Sally Kayoni in Bomet, Kenya now sells over 200 solar lights each month. Sally no-longer sells kerosene, saying: "After I starting selling these [solar lights]… there was no one asking for it anymore."

Whilst solar agents like Sally will benefit from the growth of the solar economy, customers like John Kuriuki are also benefitting. Now that the family have reduced their spending on kerosene they save 300 Kenyan Shillings every week. That's about $180 a year. He explains: "My kids don't cough now; they are safe and study well… I use the savings on buying food and paying my kids school fees."

Stories like these have inspired Google to continue its support by funding SolarAid to undertake a $650,000 study into the impact of solar lights on poverty alleviation. The resulting evidence from this large-scale study will improve SolarAid's ability to engage in discussions with policy makers.

With one million solar lights now shining across Kenya, Malawi, Tanzania and Zambia, SolarAid is not celebrating the million-mark because it feels the job is done – far from it. The soaring success of SunnyMoney sales and the appetite for solar on the continent proves what it already knows; energy access is an issue that needs solving fast. SolarAid aims to sell another million solar lights in 2014/5 and to expand into two new countries. If you would like to help SolarAid achieve this goal visit **www.solar-aid.org** to find out how you can join its journey to eradicate the kerosene lamp from Africa by 2020.

Power struggle for hybrid PV-T systems

Paul Laidler, managing director of Natural Technology Developments Ltd and developer of the new Solar Angel dual PV-T panel, is calling on the government to reverse its decision to bar solar panels generating both heat and electricity from the domestic RHI

Although this hybrid technology is already covered by the commercial RHI, a last minute amendment to legislation could force homeowners to install separate units in order to benefit from the Feed-in Tariff and RHI income.

"We are astonished by the apparent decision to exclude PV-T technology from the domestic RHI due to what appears to have been a misconception by parts of DECC that there will be a double counting of energy," said Laidler.

"This is not correct as the heat from the panels would only be counted for direct solar thermal contribution, the same as standard solar thermal panels. PV-T panels generate both heat and electricity and are actually tested and accredited as both solar thermal panels and PV panels.

"It is entirely unclear to us why PV-T technology, already eligible for the non-domestic RHI, should be specifically prevented from benefiting under the domestic scheme.

"I am disappointed that DECC is not providing clarity on this matter considering it invested seven figure sums of public money into the development of these hybrid technologies.

He added: "While this is a setback for the growth of domestic PV-T applications, fortunately the technology provides many benefits to the industrial, commercial and public sector markets where we will be focusing our attention."

Double trouble: Paul Laidler, developer of the Solar Angel PV-T panel, seeks answers from DECC over its decision to exclude solar panels generating both heat and electricity from the domestic RHI

Call to arms for potential biomass installers

Charlie Lamb, director at Windhager UK, implores all heating installers to get on board with biomass and benefit from the profitable opportunities ahead

We are entering a very strange and I believe unprecedented period of change for those of us fortunate enough to be employed in the heating industry.

Under the domestic RHI which will launch imminently, a typical three bedroom rural home assessed under the Green Deal scheme will have an annual heat and hot water demand of circa 25,000 kWh. The RHI payment on such a property will be £3,050 per year for seven years giving a total return of £21,350.

The biomass boilers of choice for mass market will be dominated by wood pellet boilers which are fully automatic and low maintenance, in line with home owners expectations. They are mainly UK sourced and manufactured and are very competitively priced, the average cost being 4.2p per kWh. (considerably less than oil, LPG or electricity).

At last one of the most competent and highly trained heating sectors in the world will be incentivised to promote, sell and install highly efficient, low carbon heating technologies. The real bonus being that homeowners will (in most situations) get their installation costs back, with interest, via the RHI payments.

Does this all sound too good to be true? The only stumbling block that I can see is a distinct lack of interest and consequential poor uptake in training from the professional heating sector, which is difficult to comprehend.

There are somewhere in the region of 130,000 Gas Safe engineers and 9500 OFTEC registered engineers in the UK today. There are less than 500 MCS registered biomass installers and this is a major issue! There are now even training grants available to encourage heating professionals to gain the necessary qualifications.

So the moral of this story is very simple. All professional heating installers who are finding things tough-going should pick up the phone and get themselves on the next available biomass course. Training for MCS registration has to be good for you and your company with the expanding opportunities ahead for biomass.

Why contractors should be wary of EBTs

With HM Revenue & Customs under pressure to raise revenue and close tax avoidance loopholes, contractor payroll procedures have come under close scrutiny. As an industry which relies heavily upon contractors, HMRC's actions are likely to impact significantly on many people working in the renewable energy sector, as **Rodger Armstrong**, commercial director of the JSA Group explains

Whilst the prospect of taking home as much as 90 percent of your income is tempting, many of the schemes offering tax avoidance use offshore trusts known as Employee Benefit Trusts (EBTs). However, having been identified as a major target by HMRC, many are being closed down, leaving contractors with unpaid salaries, tax and penalties.

When using an EBT the contractor receives a small basic salary which is subject to UK income tax and national insurance contributions. The majority of the income actually comes in the form of a loan, from which a minimal amount of interest is deducted. This means that less is deducted from gross pay, resulting in more take-home pay.

However, if shut down, the contractor is liable, not the scheme provider, meaning that the sum of any unpaid taxation is borne by the contractor, along with interest and penalties. Some EBTs claim to offer legal cover protection from potential investigations, but in practice, the EBT is often closed before a claim can ever be made.

Fortunately, there are legitimate tax efficient ways of maximising your income. For example, we anticipate an increased uptake of limited and umbrella company solutions as EBTs become increasingly unpopular. If set up by qualified personnel, these solutions are fully compliant whilst maximising your income – legitimately.

If setting up a limited company or umbrella scheme, it is always advisable to seek advice from an established company who are regularly audited to ensure full compliancy with HMRC. You have worked hard to earn your money, so why put it at risk?

Clubbing together

Following the launch of Glow-worm's Club Energy loyalty programme for installers in 2010, the scheme has gone from strength to strength, reports **Pippa Wibberley**, Glow-worm's commercial director

Club Energy – what's it all about?
Club Energy was first launched three years ago to reward installers for their loyalty to the Glow-worm brand. The scheme provides members with rewards for every Glow-worm product they install, including any boiler or renewable system, as well as a number of business tools to reduce administration and help installers to develop their business. The scheme has developed significantly since it was first launched; over 6600 installers are now signed up, with a growing number of these being renewable installers.

Numbers game: Over 6,600 installers have signed up for Glow-worm's Club Energy loyalty scheme including 766 from the renewables sector, says the company's commercial director Pippa Wibberley

What's in it for renewable installers?
We now have 766 renewable installers signed up to the scheme who are all being rewarded for each install they make across our renewables product range which includes Clearly Solar, Clearly Heat Pumps and Clearly Hybrid, as well as our range of Cylinders and Climapro2 RF controls. Rewards are instantly credited to an installer's Club Energy account once an install is registered. On top of the rewards, there is an additional range of member benefits to help support installers on the job and help them to develop and grow their business.

What renewable installers are saying…

Richard Bramwell, ePlan Energy Ltd
"I've been a member of Club Energy for a while now and have the app on my phone. The main benefit I've seen is how much easier it's made general tasks. I like that there's an app so I can very quickly do online warranty registrations; it's saved me huge amounts of time because I can do it whilst on the job rather than having to do it when I get back to the office."

Steve Hill, Acorn Plumbing
"Since being a part of Glow-worm's Club Energy I have seen many perks. I go to a lot of breakdowns and use the app on my phone to find out what the problem is without even opening my toolbox. It's not very often the customer has the manual handy so I regularly use the manuals online to quickly give me the low-down on the product I'm working on. It's also great when pricing up a job to show the customer what models would be best suited to them."

On-site tools
Renewable installs by their very nature are far more complex and unique than traditional boiler installs, and so it's important that installers can instantly access product manuals whilst on site. This is all available through the Club Energy Plumbing Toolbox app which allows installers to access homeowner guides and user manuals for installation. Warranties on renewable products will also be registered instantly through scanning the product barcode upon installation, also enabling the installer to keep a log of their customer's details in their own personal Club Energy account. So far, almost 100 renewable products have been registered through the app.

Helping to grow your business
As well as providing on-the-job tools, Club Energy and the Plumbing Toolbox app also provides a number of functions to help renewable installers to develop their own business. Upon signing up, installers are instantly registered to access new customer leads direct from homeowners looking for Glow-worm installers in their area.

Installers can also maximise their marketing by creating their own website through the site and producing professional advert and flyer designs for their business.

Footloose: Glow-worm's Club Energy Plumbing Toolbox app allows installers to access homeowner guides and user manuals for installations on the move

From PV to EV

With large numbers of PV installers exiting the industry since the Feed-in Tariff was dramatically cut and then reformed in 2012, **Suzanne Burgess**, director of Solway Renewables, tells REI how her small business has emerged from a difficult two years stronger than before

A quick check of PV installers on the MCS database reveals that less than 2,900 are currently registered across the UK – in stark contrast to almost 4,500 in the solar hey days of 2011/12.

And it gets worse. On a recent MCS surveillance visit I asked our inspector whether a rumour I'd heard about 25 percent of those companies being inactive was true. He confirmed that although it wasn't a scientifically solid statement, it certainly supported what he'd been 'hearing on the grapevine'.

In the space of two years the industry has moved from a buoyant base of active installers to a far less healthy figure. Of course what we don't know is how many businesses have gone bust and how many have just walked away from solar PV. This begs the question – why do some installers survive where others don't, particularly in the SME sector?

I can only speak from a personal perspective but we're now as busy now as we were in 2011. I've just taken on admin support and I'm concerned about how we're going to maintain our reputation for customer care.

We've had some really, really tough times but three key things have helped us ride the storm and get us back to where we were in 2011.

1. **Financial Austerity –** When things were great in 2010/11 we built up our cash reserves. It was tempting to spend, although the rush to the FiT deadline in Dec 2011 was so great it would have been difficult to find time to spend anything, frankly. We were prepared to cut back to survival budgets in 2012 and from the last quarter of 2012 to the second quarter of 2013 times were particularly tough – we didn't install a single solar system in six months. We got by on odd electrical jobs here and there but even they were difficult to find.

2. **Diversification –** I'm not talking about random, jump on the bandwagon, diversification. We held back from going down the other renewable certification routes and anything Green Deal related – although I did look long and hard at GD. We dismissed lots of products because we couldn't confirm their efficacy but, via social media, we picked up on the expansion of electrical vehicle (EV) charging nationally. The more we looked, the more ignorant we realised we were and the greater the apparent potential became. It has transformed our business.

3. **Social Media –** I can hear a lot of people groaning but consider this:

- Our introduction to EV came via Twitter
- We've had international exposure from work we've done that's been promoted via social media
- Radio 4 picked up on a Tweet I sent to Greg Barker which resulted in an interview with them, us and one of our customers. From that we got two PV jobs and a much greater local profile. I've lost count of the number of people who have commented that they heard about us via Radio 4. All from one tweet – 140 characters!

We're continually looking for the next big thing but, being a Northerner, I won't spend a penny until we're convinced it's right for our customers!

As a result of those three key components and a willingness to change, our business has been completely transformed. We're more optimistic for the future of our business than at any other time since we began in 2010.

Power couple: Lawrence and Suzanne Burgess steered their company Solway Renewables through a volatile period for the PV industry by adding electric vehicle charging to its portfolio

Partner organisation MCS presents its regular column for REI

Pumped and primed

Tony Bowen, president of the Heat Pump Association and chair of the MCS Heat Pump Technical Working Group, outlines five key reasons why now is the moment of opportunity for the heat pump installation sector

1. Heat pumps are now much better known and thousands have been successfully installed in homes. These are also widely used in commercial premises, so whatever is your speciality you will see a growing customer base.

2. The government is now totally committed to the domestic RHI. This scheme will be introduced in spring 2014 so ignore the naysayers and recognise that customers will soon be asking you what you know about heat pumps.

3. Heat pumps work! Get the sizing and installation right and heat pumps satisfy their owners and save them money (especially compared to oil, LPG and electricity).

4. The whole RHI scheme is built on a quality approach – MCS. MCS requires heat pump units to conform to performance standards and be third party tested before they can be registered on the MCS product database. Heat pumps qualifying for any government support must be installed by an MCS approved installer. How do you become approved? Have a look on the website (http://www.microgenerationcertification.org/installers-manufacturers/installers-certification). But if you want to see what procedures have to be followed, look at a document called MIS3005, the key to installation requirements for heat pumps.

   MCS is the most comprehensive scheme of its type in Europe, has been put together by industry based on its own experience, and will be the key to a successful roll out of heat pumps (and other renewable technologies as well).

5. There is always a balance of opportunity and risk. Getting into something new can cause problems, but MCS is aimed at being a reducer of risk. If an installer can use approved quality heat pumps that is already a big comfort. If he can also see in some detail the procedure that he has to follow to size and install a unit that is a huge help during the initial learning curve. And at the same time the risk to the consumer is reduced.

So have a look at this opportunity – it's better thought through than most!

Opinion

Pollard's Patter

I am recovering from Ecobuild as I write this column. Our Plumb Center presence was really great and both Practical Installer and our neighbouring stand were the scenes of much activity throughout the three days.

It is very obvious that there is an enormous appetite for information about the RHI from installers and, of course, the most asked question was repeatedly voiced 'When will it start?' At time of writing, we still await the crucial date but everyone I speak to in an official capacity ensures me that an announcement is 'imminent'. There was certainly lots to see and hear at Ecobuild 2014 which once again proved to be the 'must see' event for all those interested in renewables.

Highlights for me included some great presentations in the Green Energy Arena, the live demonstrations in the Plumb Center Practical Installer Arena, some interesting new products in the biomass sector and, of course, the enthusiasm and interest of our customers who came to visit.

We have also been running some local RHI seminars for customers which have been really well attended and we are emailing out a regular update on developments in the RHI. Plumb Center will continue to support installers with some great product offers and service innovations. We showed our new renewable and under floor heating Design Service at Ecobuild. This service is currently in trial in several areas and has proved to be very popular.

Supply and demand

With only 500 MCS registered biomass installers currently on the books, demand could prove lucrative for those in the sector once the domestic RHI is in action, says **Robert Burke**, HETAS

As I sit down to write this, the impending launch date for the domestic Renewable Heat Incentive (RHI) is still unclear. However, we very much hope that it will be implemented in April and signs from the government indicate that the launch date will indeed be this spring. Finally we will be able to welcome the initiative which could change the face of the renewables industry in England and Wales.

However, as I have said before, we need to be ready to take advantage of the benefits and opportunities that the domestic RHI will offer. The potential for the scheme is enormous, and over 100,000 Green Deal assessments have already been undertaken, which is the pre-requisite for RHI. But to date there are only approximately 500 MCS registered biomass installers. With around 600 MCS approved biomass products now available clearly there could be a shortfall in the number of installers for biomass installations.

There are several scenarios which could ensue. Those companies which are MCS registered could see a dramatic increase in demand for work as soon as the RHI is launched. Or, householders could become frustrated that they cannot get an MCS registered installer and lose faith with the scheme, which could destroy its credibility. Either way, HETAS believes there are still considerable opportunities for those businesses and installers looking to invest in MCS training and registration.

The government has so far incentivised installer training with RHI training vouchers. A Cross Skill voucher is eligible for solar thermal, heat-pump and biomass courses and is valued up to £500 or 75 percent of the total course cost including VAT – whichever is the lesser amount. So if a solar thermal course is priced at £500 + VAT totalling £600, then the voucher would be for £450. For a biomass course priced at £650 + VAT totalling £780, 75 percent of the cost is £585, but the voucher would be for a maximum of £500. Payment is made to the Training Provider upon completion of the course and assessment. Apprenticeship support vouchers are also available up to £2,500 to support those nearing the end of their plumbing/heating apprenticeship to become skilled with one or more renewable technologies.

With over 90 percent of funding on the non domestic RHI already allocated to biomass, we expect a similar surge in demand for the domestic sector. The HETAS biomass training and assessment programme meets the requirements of MCS and the domestic RHI, and we've recently streamlined the MCS application process for installers. The network of HETAS approved training centres has expanded to meet demand, and HETAS also offers a combined competent persons and MCS registration package which is financially very attractive for installers.

Our initial view is that householders will find the application process very straightforward, and the RHI has the potential for very good take up rates. However, it's all dependent on whether there are enough qualified installers, otherwise there is a danger that demand will outstrip supply. For further information on the RHI training voucher scheme visit **www.rhitraining.co.uk**, with information on MCS and biomass training available on the HETAS website at **www.hetas.co.uk.**

There could be a shortfall in the number of installers for biomass installations

CURRENT AFFAIRS

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

It looks like the domestic RHI has arrived at last. The regulations have been laid before parliament and they just need to be debated and passed and the scheme comes into being. It differs from the non domestic RHI, which originally got off to a slow start, in that in most cases metering is not required. Metering can be installed for which extra payments will be made but is only necessary if the building the heating system is installed in is not occupied for over six months of the year, i.e. a second home. It is also required if the building has another heating system installed such as an oil-fired boiler.

The domestic RHI scheme applies to systems which were commissioned after July 15 2009 and have an MCS certificate. The house must have an EPC certificate and also a Green Deal Report produced, and as a minimum loft or cavity wall insulation installed if it is recommended in the Green Deal Report. If nothing else the domestic RHI will increase the number of assessments carried out and potentially the number of Green Deals initiated, which I am sure was part of the plan to push the Green Deal. This will increase the administration burden but the effort will be worth it if the application goes through smoothly and payments start, guaranteed for seven years. This should increase the numbers of biomass boilers and both ground and air source heat pumps installed. Contractors should gear up for the potentially large market for these heating systems and promote them to their clients. Lessons have been learnt from the non-domestic scheme so the domestic RHI should get off to a good start.

A Winter's Tale

Steve Pester, BRE, examines how lessons learned from the wettest winter on record can be applied to the production of solar panels

Having toured the West Country on business twice in the last month, I have had first-hand experience of some of the effects of the recent extreme weather events. Specifically the £200 bill to have my car electrics dried out and repaired after testing my Renault's amphibious capabilities is testament that your average car is not yet really equipped for climate change.

At the National Solar Centre, we've been wondering if solar panels will fare any better. What effect will all this rough weather have on the efficiency and longevity of the current generation of solar modules? These days modules are robustly sealed and tested for water ingress under the IEC 61215 / 61646 tests, but what about possible mechanical damage due to the shaking and vibration in turbulent winds typically seen around buildings?

In a bid to continue the trend of reducing module costs, manufacturers are always trying to make use of thinner silicon cells, thereby using less of the expensive stuff. In 2004 silicon wafers (from which the cells are made) were typically around 300µm thick; these days 150 – 200µm is more typical. An obvious possible consequence of this is that they are more prone to mechanical damage – in fact the main reason for not making them any thinner than this is that they become hard to handle in the factory without breakages.

So, one of the things the NSC will be looking at, on our windy outdoor test site in Cornwall, is micro-cracking of cells in real conditions. Microscopic cracks in the silicon reduce the efficiency of cells and could even become a serious degradation factor over the long term but without hard evidence this is all conjecture, of course. The main purpose of the NSC is to obtain real-world, trustworthy data for the solar industry.

Unfortunately, we don't yet have the facilities to test the underwater capabilities of cars… perhaps on Top Gear.

Two minutes with . . .

Who are you?
Sam Waxman

What do you do?
Joint md of both Waxman Energy and Waxman Renewables

Where are you?
The two businesses are based in Grove Mills Elland, West Yorkshire – just off the M62.

How's business at the moment?
Business has been very stable during the past few months and we forecast a positive year ahead for both the domestic and commercial sector.

How could it be better?
I think I echo everyone's feelings in the industry when I say the announcement of the launch of the domestic RHI is absolutely vital now. There has been a lot of investment by companies to prepare for this launch, so to say this will be welcomed with open arms is an understatement.

What's the best business advice you've ever been given?
It is definitely to make sure you look after your cash flow. It is especially important in our industry due to the value of the goods, and how quickly the market can change. I believe that philosophy has put us in a strong position in this market.

How are you going green?
As one of the market leaders in the distribution of sustainable energy products, we feel that it is paramount for our HQ to reflect the innovations that the industry can provide and also practice what we preach in the way of becoming a more efficient and energy conscious hub.

We already have a fully functional solar PV system installed on our roof where energy is fed to our premises, so we have more control over the energy we use. Two biomass boilers have also been installed to provide heat to our show room and training facility.

Q&A

MARK DERBYSHIRE

Vaillant

What have you got planned for the rest of 2014?
Installer training will remain a key focus for Vaillant in 2014. Our seventh Centre of Excellence opens in Farnborough in the spring, bringing our quality approach to training to more installers. Our training proposition will also be refreshed, and our first app for installers will be launched in the coming months – watch this space!

What do you see as the growth areas in renewables?
It'll certainly be interesting to see how the RHI incentives going live will affect consumer decision-making. In terms of product systems, we predict the rise of the hybrid: pairing an air-source heat pump with a traditional heat generator provides the perfect compromise for a homeowner reluctant to take the leap into the green unknown. The flexibility afforded by a hybrid system can help to ease homeowners into renewables with a 'best of both worlds' solution.

How is the company cutting its carbon footprint?
Since 2011, Vaillant Group has successfully met self-imposed zero waste to landfill targets. We recycle 700 tonnes of waste every year, and an additional 65 tonnes of non-recyclable material is remotely converted into electricity. Our award-winning S.E.E.D.S (Sustainability in Environment, Employees, Development & Products and Society) programme ensures that our Belper plant now manufactures each boiler using less energy and water and creates less waste and carbon emissions than ever before.

Mark Derbyshire is Vaillant's commercial director

Made in Britain

With the international PV manufacturing industry traditionally dominated by China and the Far East, there has been little focus thus far on a fledgling home grown sector.

This month REI speaks to three UK-based firms to find out how Britain is making waves at the forefront of solar design and innovation, and why the nation is rapidly making inroads into the global market

Next generation

Innovation is alive and well in the UK PV sector with County Durham-based manufacturer Romag a leading light in building integrated PV (BIPV), explains the company's md Phil Murray

Over the past few months Romag has experienced an increase in demand for roof and BIPV products. With an ever-growing focus on sustainable construction via the Code for Sustainable Homes and the Carbon Reduction Commitment and BREEAM standards for commercial buildings, more and more companies recognise the need to integrate PV into their buildings. Romag roof integrated solar tiles offer an improved visual finish over standard on-roof modules by integrating seamlessly into the roof covering.

The system has been developed for use on sloping tiled and slate roofs, with one of the highest power densities available on the market, the PV tiles integrate into the roof rather than being mounted on top. It is ideally suited for new builds or re-roofing as it is attached straight to the roof battens and can be used with a wide range of conventional roof tiles.

Flagship project: Romag's PV roof tiles were used on the UK's largest zero carbon housing development at Park Dale, in Castleford, West Yorkshire

For new build projects solar tiles are generally specified to meet an exact requirement for the Code for Sustainable Homes in terms of the kWp needed. They are also perfect for roof replacement schemes and investment now can generate a guaranteed income for the next 25 years.

More and more companies recognise the need to integrate PV into their buildings

The solar tiles are MCS approved and, as the system sits flush with the roof, no extra planning permission is required. They are simple to install and have already been used throughout the country by many house builders including Redrow, Berkley Homes and Lacey Simmons to deliver sustainable housing developments. The panels were also used on the UK's largest zero carbon housing development, Park Dale, in Castleford, West Yorkshire, to generate electricity and help achieve the highest level of the Code.

We believe flexibility is key to the growth of this market and as well as solar tiles we also offer glass/glass BIPV options such as facades, atria, rooflights, louvres and canopies.

All of Romag's products are manufactured at our UK plant in the North East of England. This not only results in a lower carbon footprint when compared to imported PV products but also provides customers with access to a team of specialists and a customer service team to respond to any technical queries. This is particularly of benefit in relation to integrated products where a bit more support may be needed.

All of Romag's products are manufactured at our UK plant in the North East of England

We currently employ around 180 highly skilled staff and support many more throughout the supply chain both here in the UK and further afield.

Support group: Romag technical staff are easily accessible to UK installers at the firm's North East manufacturing base

Flying the flag

For quality, aesthetics and complete piece of mind, installers should encourage their customers to buy British, says **Ray Paice,** BIPV manager of GB Sol

There is very little doubt that the British solar PV industry has been through a very torrid time with a falling Feed-in Tariff, lower prices causing increased competition for installers and manufacturers alike, and the ever changing and mixed messages from the rulemakers.

But despite all this turmoil, the resilient UK manufacturers still have optimism in the market as 2014 has shown increasing levels of interest.

Climate change minister Greg Barker reflected this optimism by recently tweeting: *"Worried you missed your chance in 2011? Thanks to our reforms, hard work by industry & crashing prices, my message v simple #Solar is back!"*

Although 80 percent or more of the European market is served by the Chinese manufacturers, the UK's producers are busy providing a high quality alternative as well as producing 'standard' 250W panels for the over-roof market. They are also responding to the growing desire for BIPV integrated systems and fulfilling the imaginative requests as people seek more and more ways to enjoy the benefits of renewable energy provides.

So why support your home grown products when the constructional basics appear so similar? Well, there are many reasons you may wish to consider UK products, especially as a recent report from a respected testing house showed an increasing failure rate in tested panels from Chinese manufacturers as the drive for lower prices is reflected in their production quality.

British manufacturers produce high quality products and have been doing so from as far back as 1995, providing experience and track record to back their performance warranties with 20 years of manufacturing.

It is undeniable that the most forceful motive for a retrofit system is financial but a strong second is the desire to install a 'green' product that has not been shipped halfway around the world.

There are subtle quality differences too. For example, at least one British manufacturer uses 4mm thick toughened glass in their construction process, whereas most imports are only 3.2mm, with the logical improvement to their resistance to impacts. To try to save on their shipping costs some overseas manufacturers have reduced the frame depth too, so they can pack more onto each pallet, which in turn you would assume could impact on the modules' rigidity.

An aesthetically pleasing and planning authority-friendly in-roof BIPV solution looks so much better than the retrofit over-roof solutions mostly installed today. Housing developers are responding to tightening regulations that encourage the use of solar panels, but previously have been resistant to include anything that compromises the aesthetics of the new home. However, the more solar enlightened developer is introducing roof integrated systems into their designs and benefiting from the desirability and added value this adds to a new home.

Home front: Despite 80 percent of the European PV market being served by Chinese manufacturers, UK firms are rapidly gaining ground in market share due to a rise in demand for BIPV

To maximise the aesthetic options on hipped or bespoke roofs, or as an architectural feature, panels are also available in triangular and trapezoid shapes.

Most of all you will be supporting British industry, UK jobs and buying a product produced to the very highest standards.

UK producers, unlike many Chinese manufacturers, have not been subsidised by their government so sustainable businesses are fully able to support you in the future in the unlikely event you may have any issues and will need to rely on their expertise.

If you want a reliable system on your roof, one that will provide function for longer than the 20 years of the Feed-in Tariff payments, one that is aesthetic with local support then the message is clear – buy British.

UK producers, unlike many Chinese manufacturers, have not been subsidised by their government so sustainable businesses are fully able to support you in the future

Home grown talent

A focus on commercialising innovation will help position the UK as a leader in the multitrillion pound electricity generation market, says **Kevin Arthur**, co-founder and ceo of Oxford PV

The British have a long tradition of invention and innovation. Look on Wikipedia and there is a dizzying array of ground breaking products, processes and services that the British have had a hand in.

What we have been less good at historically though is keeping hold of the profits from these innovations; watching on as other countries become the experts at manufacturing and selling our ideas and reaping the benefits.

We now have a fantastic opportunity in the field of renewable energy and, I believe, particularly solar power. In recent years, the UK's solar sector has been losing out to China in particular, but also to our European neighbours, but we at Oxford PV plan to change this.

As a spin out from Oxford University, our goal is to bring to market the potentially world changing Perovskite technology that is being developed in our laboratories and at the Physics Department of the University. The new type of solar cells that we are commercialising are designed to be simply integrated into the glass facades of buildings, enabling generation of, we believe, up to 50 percent of its energy needs. Using low cost, abundant raw materials, we're setting out to revolutionise the PV market.

However, as a small business, established less than four years ago, we are not intending to build a factory to manufacture the solar glass. It would take several years, and tens of millions of pounds for us to build a single facility and then, given that glass is generally not transported large distances, we would then have to replicate this in every country we wanted to enter.

Clearly this is not a scaleable, or indeed a sustainable model. So rather than compete with our international rivals from a position of relative weakness, we plan to partner with the global glass manufacturers, licensing our technology to them for a fee and taking a percentage of sales to re-invest in further development. What we have recognised is that we need to stick to what we're good at and allow the existing global supply chain to do what it does best.

University challenge: Oxford PV's goal is to bring to market cutting edge Perovskite technology being developed in its laboratories and the Physics Department at Oxford University

In this respect we are following a very similar business model to companies such as ARM, the leading holder of intellectual property in the microprocessor industry. ARM doesn't manufacture, but licenses its inventions – and ongoing refinements of these – to the global producers. ARM's technology can be found in smartphones, tablets, toys, the whole range of electronic equipment and it has built a fantastically successful company on this basis. Formed in 1990 in Cambridge, ARM now employs over 2,000 people worldwide.

In recent years the UK's solar sector has been losing out to China, but we at Oxford PV plan to change this

Our vision then is to build partnerships with the giant, global glass manufacturers, as well as building a robust supply chain for the necessary raw materials. We are also investigating how we can work with global machinery manufacturers to create a suite of bespoke tools that can simply slot into an existing float glass line or glass processing line and apply our technology at minimal additional cost.

We are also keeping a close eye on the progress that is being made in energy storage. The UK's largest intelligent storage trial, announced last summer, is in Leighton Buzzard in Bedfordshire and success would transform the future not just of our business, but of renewable energy generally.

In the meantime, we are expanding rapidly and expect to have around 50 people employed by the middle of next year (from 14 at the beginning of 2014). Ultimately, the solar market can create thousands of skilled jobs in the UK and firmly position us to benefit from the demand for energy that will continue to grow.

Lessons from Sweden

The UK can learn a lot from Sweden when it comes to the uptake of biomass boilers, explains **Simon Cross**, commercial director at Ixus Energy

Did you know that in Sweden, 80 per cent of boilers run on biomass? In fact, biomass accounts for more than half of all heating in Sweden's housing and service sectors. There are also around 100,000 small-scale pellet heating systems operating in the country.

This is the highest rate in Europe with other countries such as Germany, Finland and Norway running approximately 40 per cent of boilers on biomass. However, in the UK, the figure is a lowly five per cent.

But why is this and what can the UK learn from Sweden?

Like all Swedish products – think IKEA – the country's biomass boilers have a reputation for working effectively and standing the test of time. Some suppliers have been in the business for over 30 years, developing, manufacturing and supplying biomass boilers to the mass market.

It's through this experience that Sweden has become a trusted source and is regarded as a champion for biomass. Swedish boilers have gained the reputation of being innovative and reliable products.

At IXUS Energy, we supply Effecta boilers – specifically the Effecta Lambda 25, 35 and 60kW boilers as well as the Effecta Komplett 20 and 35kW boilers – which are all manufactured in Sweden.

Ever the innovators, the Swedes behind the Lambda range have created a new generation of wood log boilers. The option to add a pellet burner provides versatility and the option of manual or fully automatic operation. The automatic function allows for peace of mind as the boiler can be left to run unattended when there is no-one home.

Like the famous IKEA flat pack furniture, the Effecta Komplett boiler is very simple to install. With a four-pipe connection, the boiler can provide weather compensated heating and instantaneous hot water without the need for an accumulator tank or domestic hot water cylinder.

Unlike the IKEA flat pack, Effecta boilers are delivered fully assembled and pre-wired. For installers, the boiler is easy to fit and quick to commission, and for the homeowner this minimises installation costs.

Like the famous IKEA flat pack furniture, the Effecta Komplett boiler is very simple to install

Pro bono: Northumberland-based IXUS Energy is offering free training courses for installers wishing to add biomass to their skills set

With the introduction of the government's domestic Renewable Heat Incentive (RHI), we're predicting a biomass boom. While wood-burning used to be considered old fashioned in Britain, it is now cutting-edge technology and will soon be a viable alternative for home-owners up and down the country.

For installers considering adding biomass to their portfolio of products, there has never been a better time to get on board. At IXUS Energy, we offer an installer training programme at our state-of-the-art training centre in Northumberland. Whether a seasoned professional or just starting out on a biomass career, IXUS Energy's training course offers installers the very best training and ongoing up-skilling.

The course is free of charge and lasts two days. Day one of the programme is an introduction to biomass and covers areas including boiler types, fuel storage, combustion and site surveys. The second day of the course builds on this foundation and covers system dimensioning, hydraulics and electrics, and flue systems.

So what can we learn from Sweden? Experience and trust comes with time – invest in quality products, communicate the benefits of biomass and in time, we too could be seeing biomass rates like Sweden's. Biomass is about to take off in Britain as it has done in other areas of Europe – an excellent opportunity that installers should not miss.

Declaration of independence

Energy independence is the key to the success of farmscale wind, says Gaia-Wind ceo **Johnnie Andringa**

From 01 April the new Feed-in Tariffs will be in operation. That these have been subject to a reduction can't be denied but degression has always been an understood part of the FiT regime.

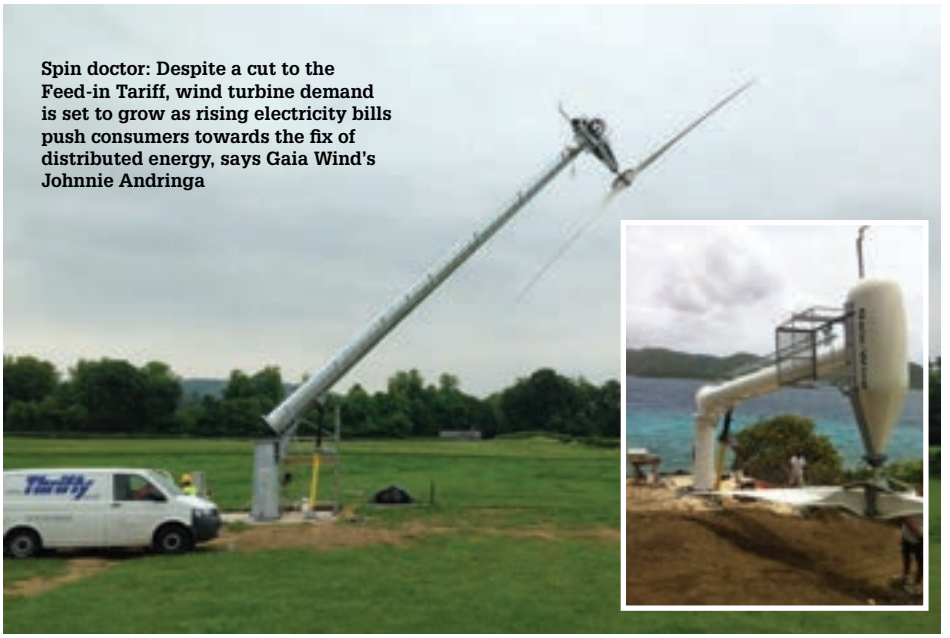
Across the industry, manufacturers have been working towards a situation where the boost given by financial subsidies becomes a less and less important element of the investment.

The prospect of a new, degressed FiT regime has also seen manufacturers working hard to minimise the potential for cost increases in plant etc going forward.

The future for farmscale wind is, I think, still one full of potential. The arena will open up between what is best described as small wind (<15kW) and turbines of up to 100kW. The larger category will provide an investment income which – because production so far exceeds onsite usage requirements – may diminish in proportion to the rise in cost of domestic energy.

Those who choose to go down the small wind route will still be making a fantastic investment decision. On our own Gaia-Wind 133 turbine we calculate that over the lifetime of the turbine on medium windy sites (5-6m/s), ROI will be between 12-14 percent.

But the biggest development to grab the attention of prospective small wind turbine owners will be the inexorable rise of the cost of domestic energy. Ofgem says: "Britain's domestic energy prices are still relatively low compared to most European countries." Yet we have seen energy prices soar over the last few years and are reliably informed that this won't stop anytime soon.



Spin doctor: Despite a cut to the Feed-in Tariff, wind turbine demand is set to grow as rising electricity bills push consumers towards the fix of distributed energy, says Gaia Wind's Johnnie Andringa

Just to give a measure of the scope for this increase, Ofgem figures tell us that London electricity prices are the fourth cheapest in Europe at 15.32 Euro cents with gas the cheapest at 4.74 Ecents. Compare this with say Copenhagen at 30.46 and 12.16 respectively.

The buzzword here is 'distributed energy' – that is, electricity being generated where it is used. Most often this means one or two individual machines for people trying to reduce their energy costs and make a contribution against climate change. Typically, wind turbines for the farm use market are small enough (sub 25m) to fit well within their environment and can seldom be seen from 400yds away, therefore gaining planning permission relatively quickly.

Crucially, they can be bought by 'normal' owners as they do not require the involvement of developers, or huge investment funds. This class of turbines largely serves the rural domestic property, farm, school or small business-based sector where a combination of the Feed-in Tariff and renewable energy supply bring affordable energy independence to thousands.

Government also has the capacity and maybe, even the will to help here. Climate change minister Greg Barker says he wants: "A decentralised power to the people energy revolution – not just a few exemplars but tens of thousands of them. The Big Six need to become the Big 60,000…We must also look to do far more to integrate our new policies that help families produce their own renewable electricity."

The farmscale wind turbine will without doubt play a central part in that revolution.

The biggest development to grab the attention of prospective small wind turbine owners will be the inexorable rise of the cost of domestic energy

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Quality control

With the introduction of the domestic RHI just around the corner, Michael and Kate Wright of **Yorkshire Heat Pumps** discuss what consumers should be looking for when selecting a high quality provider

The early bird will catch the juiciest worm. And just like the Feed-in Tariff and solar PV, there is a likelihood that domestic RHI tariffs will be dropping sooner rather than later, which has led to a flurry of eager homeowners looking to bag the best deal. But with the rush of enthusiasm, there's an element of risk as homeowners may not be paying close enough attention to their choice of installer, which further down the line could lead to disappointment.

Cutting corners

Perhaps unsurprisingly there has been a sudden outbreak of opportunist new providers on the scene looking to make a fast buck with what appear to be poorly – or over-specified systems that homeowners may not necessarily need or benefit from.

When this kind of significant purchase is made, excellent customer service and aftercare are paramount. Unfortunately though, we have heard stories from clients that some of the big players in the market have failed to provide even the most basic levels of customer service and care.

Where prospects are seeking alternative quotations, we sometimes get sight of the detail, and have been just as perplexed as the customer at the difference in specification and price. This could be due to sloppy surveys or product understanding – or in the worst case scenario companies over-specifying a system in order to maximise their profit margin.

Unsurprisingly there has been a sudden outbreak of opportunist new providers on the scene looking to make a fast buck

Dividing line

The government has, perhaps, got it right on this one. There's a lot of red tape surrounding the whole renewable installation process and this is one of the major factors that will separate the men from the boys.

Companies who want to specify and install renewable technologies are being asked to jump through multiple hoops to demonstrate they really do have the customer's best interests at heart. From the application for Renewable Energy Consumer Code (RECC) membership to preparation for the Microgeneration Certification Scheme (MCS) assessment, the checks are rigorous to say the least.

Badge of honour

Customers need to have confidence in their provider, and for the specifier and installer the standard of MCS accreditation and the badge of honour that is the RECC logo are an absolute must as they are shorthand for trustworthiness.

We believe good old fashioned customer service and communication should be at the heart of any service business. It is essential for the customer to be able to feel comfortable enough to ask questions, bearing in mind the technical and complex nature of the purchase.

So it begs the question, how should customers navigate their way through all of this complexity and ensure they are getting the best advice?

Customers should ask themselves:

- Does the provider seem to care about my project and interests?
- Do they call me back in a timely manner?
- Do they take time to understand my concerns and try to allay them?
- Have they explained why they have recommended a particular solution?
- Do they baffle me with jargon or explain things to me in plain English?

And if the answer is yes to all of these questions then they could have found the right installer for them.

Right choice: Consumers looking to capitalise on the domestic RHI will need to be more discerning over their choice of installer to avoid disappointment, says Michael and Kate Wright, Yorkshire Heat Pumps

We believe good old fashioned customer service and communication should be at the heart of any service business

Heat pump cylinders: A specifier's guide

Jason Hobson, managing director at Gledhill, offers an insight into specifying the correct cylinder for a heat pump installation

The first criteria to consider is whether the heat pump will be required to supply the hot water and heating system or hot water only.

For a hot water and heating system, a combination of a buffer tank and a hot water tank maybe required, or alternatively a thermal store specifically designed for use with heat pumps which can accommodate the heating buffering requirement and the hot water which is generated by a secondary heat exchanger.

For hot water-only systems, an unvented cylinder, such as Gledhill StainlessLite HP, would be recommended and the size of cylinder specified will depend on the number of bedrooms and bathrooms in the property. This is because capacity needs to be based on the potential number of hot water users, rather than the square footage of the property.

Hot water cylinders

Where mains pressure hot water is required, it is vital that the coil heat exchanger used is capable of maximising the lower temperatures supplied by a heat pump and a means of pasturisation is provided in the form of an immersion element to protect against legionella.

The thermostat is capable of switching the immersion heater on at a temperature just below the heat pump maximum and switching it off at between 60-65°C to prevent unnecessary use of mains electricity.

Unvented systems, such as Gledhill's StainlessLite HP cylinders, work by using a high performance multi-pass corrugated coil which provides maximum heat exchange from the heat pump, a low pressure drop across the coil, and allows the higher flow rates required from a heat pump. The domestic hot water that is delivered to the taps is the water that is stored within the cylinder, which has been heated via the internal coil.

The size of cylinder specified will depend on the number of bedrooms and bathrooms in the property

It is an essential consideration that the heat exchanger is larger than those typically found in a conventional boiler. Specifiers should look for a high kW output which allows higher flow rates and which has been purpose-designed for heat pumps.

Another consideration may be the space required for the cylinder in order to upgrade to a heat pump installation. Gledhill has overcome this issue by developing a slimline model, enabling installers to overcome the space constraints of retrofit situations.

Thermal store specification

A correctly specified and configured thermal store will also use conventional energy sources to boost the system if the heat pump energy is insufficient to meet the property's needs, but it will optimise the use of heat pump energy for both hot water and heating.

A thermal store designed specifically for use with heat pumps, such as Gledhill's Torrent GreenHeat HP, will heat the water directly rather than via a heat exchanger/coil, enabling the full heat pump output to be delivered direct to the store. The domestic hot water is generated via a plate heat exchanger. As hot water is demanded, it is mains cold water which is instantaneously heated as it passes through the heat exchanger and delivered to the taps. This method of generating the hot water completely removes the risk of legionella.

By specifying a thermal store that makes most efficient use of the heat pump energy, the specifier can ensure that less conventional energy is required to boost the hot water temperature.

The temperature boost function can be delivered either by conventional energy or by other renewable sources, such as a wood burner, biomass boiler or solar power, for example, and one of the advantages of a thermal store is that it can utilise numerous energy sources at the same time. As a result, it's important that the specifier selects the right combination of tappings for the installation and considers both the current and future needs of the property.

Room to manoeuvre: Gledhill has launched a slimline cylinder to counteract the tight spaces often encountered in retrofit environments

Sweet success

A Welsh honey producer has slashed its energy bills by £23,000 a year after commissioning a wood pellet boiler heating system from **Organic Energy**

Supplied by Organic Energy and installed by Menai Heating, the ÖkoFEN Pellematic PES 56kW wood pellet boiler has displaced 100 percent of Aberystwyth-based Tropical Forest's annual LPG and electricity consumption for heating.

The business reports it is now using 50 percent less energy per kilogram of honey produced and annual savings for the plant now stand at £23,359 with a 63.6 tonne saving in annual CO2.

Tropical Forest is also in line for RHI payments of £5,000 – £6,100 per annum with a 1.7 year return on investment.

Luke Wainwright of Tropical Forest said: "This project has been a very complicated one and has involved creating new systems to use the energy from the boiler efficiently.

"We pushed the boundary of what is possible with an ÖkoFEN boiler here at our honey factory. It has been a difficult journey matching the capabilities of the boiler to our specific technical needs but Organic Energy has been with us every step of the way."

He added: "Our system is now fully operational and our business is reaping the benefits both financially and in terms of productivity, let alone the 80 percent reduction in CO2 emissions."

Golden era: Tropical Energy's ÖkoFEN Pellematic PES 56kW wood pellet boiler is netting the Welsh honey producer almost £30,000 a year through energy bill savings and RHI income

Shining example

8,000 solar panels have been installed on the roof of **Wolseley UK**'s National Distribution Centre (NDC) in Leamington Spa, capable of generating enough electricity to power around 450 homes a year

Wolseley UK, which includes the nationwide network of Plumb Center branches, carried out the installation over a six month period covering a roof area of 13,113m² – roughly the size of two football pitches.

At full capacity, the estimated output the system will completely power Wolseley UK's NDC plus a 10 percent energy surplus netting £6.5m in Feed-in Tariff payments over the next 20 years. It should also achieve carbon savings for the trade distributor of around 1280 tonnes per year.

Steve Ashmore, Wolseley UK's managing director, said: "As a business, we are committed to sustainable building. We opened the UK's first commercial showcase for sustainable building products and construction methods, our Sustainable Building Center, in 2008. And we are continuing to lead the way by investing in the technology that we advocate.

Aiming high: (L-R) Tim Pollard, head of sustainability, Kirsty Greggs, environmental manager, and Simon Allen, renewables director, inspect Wolseley UK's 2MW 8,020 panel PV system

"We are already seeing some fantastic environmental and cost savings from our PV installation and I hope that our success will inspire our customers into adopting green energy solutions, due to the significant results they can achieve."

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An all-consuming problem

Babak Daemi, managing director of Everlasting Marketing & PR, discusses auxiliary technologies that renewable installers could consider for commercial installations on industrial buildings

To many installers diversity is the key ingredient to success in the sustainable energy market. Traditionally the decision to diversify is commonly based on one of two approaches. These approaches are a resource-led approach or customer-led approach – sometimes known as a market-led approach. The resource-led approach has created many multi-discipline installers focusing on a single core competency. For example, many roofing companies have added solar thermal to solar PV because it goes on the roof. However, most installers know that a customer-led approach will benefit their business more financially.

Inside out

Using the former approach I have looked at some technologies that are the perfect addition to the renewable installer's portfolio. Fitting solar panels to the roof of a commercial building is fantastic. We see on a regular basis in REI great examples of large on-roof installations. However, what about inside the building? How is that energy being used and how can you help more?

It's inside the building that many installers are missing opportunities

There are the obvious examples such as lighting. The benefits to the end-user and installer are manifold as good energy efficient lighting will bring down the aggregated payback of solar PV. In addition, the customer reduces their lighting load substantially before they start generating their own power. This means that the electricity generated will become a higher percentage of the overall power used.

However, I suspect that most installers sell energy efficient lighting now. It's inside that building that many installers are missing opportunities. The majority of factories, manufacturing facilities and assembly plants will have a series of machines running at all times. According to DECC, 21 percent of all electricity used in the UK is by industrial electric motors.

The energy consumption of fixed-speed electrical motors; such as a conveyor belt, fly-wheel press or moulding machine has two stages, on and off. This means energy is consumed at 100 percent whether a motor is running at 10, 50 or 100 percent capacity. This is because motors don't have the intelligence to control the power it uses depending on the workload of the task.

Another key issue for large manufacturers is 'peak-demand penalties'. There are two elements to electricity prices for industrial buildings, actual usage and peak-demand penalty. Peak-demand penalty is based on the highest point of demand within the billing period (weekly, monthly or annually). The most common cause for industrial buildings to hit this peak-demand is the moment factory machinery is turned on.

Intelligent solution

For factory owners this is a real problem. However, for renewable installers this is a real opportunity. Suresense Technologies, a British manufacturer of energy efficient technology, has a solution to this problem – a soft-starter. A soft-starter will reduce the initial power used by a machine when starting, significantly reducing the risk of 'peak-demand-penalties'. Suresense has developed the technology so it is also an energy management system for fixed-speed motors.

Ian Hambly, ceo of Suresense Technologies, said: "As a provider of high performance energy efficiency systems such as the Integra soft-starter, many of our sales originate through renewable energy engineers, consultancies and providers

of other energy related solutions such as solar PV suppliers. As well as soft-starter technology many of our customers also install our intelligent lighting solutions."

Although installers have to ensure they consider their core competencies and skills, it is still important to sell a number of additional products to increase the profit of an installation and improve the customers experience with your business.

As a provider of high performance energy efficiency systems, many of Suresense's sales originate through renewable energy engineers

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Generation tariffs for non PV technologies

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

(Source: OFGEM)

Number of MCS registered installers per technology

Technology type	Cumulative number	Registered February 14
Solar PV	2881	22
Biomass	306	18
Air source heat pump	870	07
Ground source heat pump	725	07
Solar thermal	1025	10
Small Wind	110	02
Total	3416	44

Number of MCS registered installations per technology

Technology type	Cumulative number	Installed Feb 14
Solar PV	520134	9151
Biomass	4648	238
Air source heat pump	26791	687
Ground source heat pump	7815	166
Solar thermal	6192	34
Small Wind	4338	62
Total	569918	10338

(Figures supplied by Gemserv)

Generation tariffs for Solar PV

Tariff band	FiT rate (p/kWh)
<4kW	14.38
>4-10kW	13.03
>10-50kW	12.13
>50-150kW	10.71
>150-250kW	10.25
>250kW-500kW	6.61
Standalone	6.61
Export Tariff	4.77

Domestic RHI tariffs

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

Domestic RHI is expected to be introduced in spring 2014 and will apply to all eligible installations installed since 15 July 2009

Green Deal

Month	Assessments	Live GD Plans cumulative
January 14	15268	120
Total	145110	746

Green Deal supply chain

Month	Assessor organisations	Providers	Installers
January 14	13	05	79
Total	344	130	2432

(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	0.61 per litre	2530 litres	£1,543
Wood pellets	4800 per tonne	94	24300	235 per tonne	5 tonnes	£1,175
Natural gas	1 per kWh	90	25300	0.047 per kWh	25300 kWh	£1,189
LPG	6.6 per litre	90	25300	0.45 per litre	3833 litres	£1,725
Electricity	1 per kWh	100	23000	0.16 per kWh	23000 kWh	£3,680
*Air source heat pump	1 per kWh	290	7931	0.16 per kWh	7931kWh	£1,269
*Ground source heat pump	1 per kWh	360	6389	0.16 per kWh	6389kWh	£1022
Dual mode system 1						
Oil boiler (30% of heat load)	10 per litre	90	7590	0.61 per litre	759 litres	£463
*Air source heat pump (70% of heat load)	1 per kWh	290	5552	0.16 per kWh	5552 kWh	£888
Dual mode system 2						
Gas boiler (30% of heat load)	1 per kWh	90	7590	0.05 per kWh	7590 kWh	£380
*Air source heat pump (70% of heat load)	1 per kWh	290	5552	0.16 per kWh	5552 kWh	£888

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

RHI non-domestic rates

Tariff name	Eligible technology	Eligible sizes	Tariff rate (pence/kWh)	Tariff duration
Small biomass	Solid biomass: Municipal solid waste (inc CHP)	Less than 200 kWth	Tier 1: 8.6 Tier 2: 2.2	20
Medium biomass	Solid biomass: Municipal solid waste (inc CHP)	200 kWth and above, less than 100 kWth	Tier 1: 5.0 Tier 2: 2.1	20
Large biomass	Solid biomass: Municipal solid waste (inc CHP)	1000 kWth and above	2.0	20
Small ground source	Ground source heat pumps, water-source heat pumps, deep geothermal	Less than 100 kWth	Tier 1: 8.7 Tier 2: 2.6	20
Large ground source	Ground source heat pumps, water-source heat pumps, deep geothermal	100 kWth and above	Tier 1: 8.7 Tier 2: 2.6	20
Solar thermal	Solar thermal	Less than 200 kWth	10	20
A2W heat pumps	ASHPs	All	2.5	20

(Source: OFGEM)

Green Deal cashback levels

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

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

What data would you like to see on this page?

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Knowledge: Case studies

SOLAR PV

What: 5 star luxury B&B goes green

How: 4kW PV array, voltage optimisation and a 32A Electric Vehicle Charging Station

Result: Energy bill savings and Feed-in Tariff income

Guests at a 5 star bed and breakfast are now being treated to a greener experience when they book into the luxurious guesthouse Afon Gwyn in Betws Y Coed. The hotel recently went through an eco upgrade thanks to the team at Carbon Zero in North Wales.

Due to aesthetics the choice was made to install the black/black modules from SolarWorld in a simple portrait alignment on the roof. Along with the PV array a number of other technologies were installed including a 100A Eco Max voltage optimisation unit to help further reduce electricity bills.

To top the installation off, the property was fitted with a free electric vehicle charging point thanks to an OLEV Grant Fund through Rolec/ Rexel Energy. The property was fitted with a Type 1 32Amp fast charge unit fitted on the side of the property.

Gareth from Carbon Zero said: "We are delighted with the finished job and really enjoy helping local business save energy and make money, we hope other hotels locally may consider this in the future for their hotels."

Guesthouse owner Gareth Vaughan added: "We are delighted with the work and the speed in which it was completed. We are looking forward to reaping the benefits in the years to come."

Charging ahead: The Afon Gwyn guesthouse in Betws Y Coed has supplemented solar PV with an electric vehicle charging point

BIOMASS

What: TV's River Cottage chooses renewable heating

How: Winghager BioWIN Excel 60kW pellet boiler

Result: Fully automated day-to-day running

River Cottage, made famous for its promotion of environmentally-friendly living by celebrity chef Hugh Fearnley-Whittingstall, has opted for biomass heating with a Windhager BioWIN Excel 60kW pellet boiler.

West Dorset-based installer AP Chant installed the boiler in a 17th century barn previously gutted by fire at the property near Axminister, Devon.

Having had poor prior experience with biomass, River Cottage had strict criteria at the newly-renovated site to heat the cookery school and event space.

The Windhager BioWIN Excel boiler was installed in a newly-built plant room, which utilised the existing farm buildings to incorporate a pellet storage hopper. An accumulator tank is also sited in the plant room to increase the boiler's efficiency and maximise payments received from the non-domestic RHI.

Heating and hot water is supplied to the main house and other buildings via an underground heat main and an insulated pipe system to minimise heat loss.

According to Windhager, the low maintenance required by the boiler due to its automated system was a primary reason it was specified for the project. Its automated cleaning technology is designed to keep the burner bowl clear of ash whilst the automatic pellet feed means there is no manual aspect to its day-to-day running.

Recipe for success: After suffering devastating fire at the site, TV chef Hugh Fearnley-Whittingstall's River Cottage is now fully heated by biomass

SOLAR PV

What: Navitron brings solar power to Sierra Leone school

How: Eight donated panels installed by volunteers

Result: Extension to school opening hours

Navitron was recently tasked with installing a total of twenty solar panels at The David School, Sierra Leone. Located in Mile 36, a poor, rural village near the capital of Freetown, it is situated in an area without any electricity. The completed project enables students to work in well-lit classrooms, as well as provide power for computers, fans and a refrigerator to store essential vaccines.

One of the goals set after opening the school was to extend its hours to include adults and those who'd not had an education. However, prior to the installation, it only had wind-up torches, petrol burners and candles to light the school after sunset at 6pm.

Navitron donated eight panels to The David School for the first installation and 12 for a second which were installed by volunteers trained by Navitron at no cost.

Steve Knight, managing director of Navitron, said: "We were delighted to facilitate a project where the installation of renewable technology was life-changing.

"Our systems for the David School provided the electricity necessary for the school to operate, while also providing students in Mile 36 of Sierra Leone a proper learning environment and chance to obtain a valuable education they might not have received otherwise."

The school's founder and trustee, David Wallwork, added: "Soon after I met Steve Knight and his team, I knew that working with Navitron would be the way forward for us. They provided expert advice on how to accomplish what we wanted to achieve without ever seeming out of their comfort zone. Navitron's calculations and suggestions were tailored especially for the Trust, and were in line with what we could afford."

Brighter future: Prior to the installation of 20 PV panels donated by Navitron, The David School in rural Sierra Leone relied on candles and petrol burners for light after sunset

HEAT PUMPS

What: Victorian pumping station brought into the 21st Century

How: 5kW Mitsubishi Ecodan

Result: 50 percent reduction in energy bills and TV coverage of project

Two designers from London have been featured on prime time TV for their restoration of a Victorian pumping station.

Alison and Matthew Grey were followed by Channel 4's series Restoration Man after purchasing the 19th century property near Cheshunt, Hertforshire.

The couple spent almost £80,000 on a new roof and new sewage facilities to make the property habitable before adding 14 PV panels, two solar thermal panels and the 5kW Ecodan unit for the hot water.

"We filmed quite a bit on why we had chosen to install an Ecodan heat pump for our heating, PV panels to help generate electricity and a Lossnay heat recovery ventilation unit," said Alison.

"We knew that heating a building of this size would be extremely costly without some form of sustainable energy. When we spoke to our installer about heating and looked at the options on the market, there was only one clear winner – Ecodan was streets ahead of other heat pumps on the market in terms of performance, flexibility and support from the manufacturer."

The programme's presenter George Clark called them 'true restoration heroes' because of their refusal to compromise on design and quality. Alison Grey is also confident that the heat pump system will pay for itself within a couple of years adding: "The heat pump and under floor heating system combined did cost more than a traditional carbon-based system would have cost to fit, but the running costs will be less than half of an oil or LPG system and we are also eligible under the RHI."

Picture this: Alison and Matthew Grey saw their Victorian pumping station renovation project, heavily incorporating renewable energy, featured on Channel 4's Restoration Man

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Catching the RHI train

Installers looking to benefit from the commercial opportunities offered by the domestic RHI should look no further than The Centre for Alternative Technology (CAT), says CAT's media officer **Kit Jones**

For many years it has felt as though micro and small scale biomass is just about to take off. After all, it was way back at the start of 2010 that the fresh-faced energy minister Ed Miliband first floated the idea of the renewable heat incentive.

Now it looks as though the waiting may be nearly over. DECC have just launched their RHI roadshow at EcoBuild, and are promising that the domestic scheme will open this spring. It will surely provide a boost to the nascent biomass sector. There are other reasons to be optimistic about the prospects for biomass too. Here in Wales we are experiencing a growing interest in community woodland and energy. Producing fuel can be an important part of a sustainable woodland management plan.

In order that the full benefits of the RHI scheme are felt, new skills must be developed by the plumbing and heating sector. A report by the Aldersgate Group argues that: "It is vital that the current and future workforce has the learning and skills to thrive in a new economy." Our role at the Centre for Alternative Technology (CAT) is to provide those skills.

Situated in mid-Wales and surrounded by a sustainably managed forest, CAT is a unique place to do an installers course. We have 40 year's experience teaching skills for sustainable transformation and are also a HETAS certified biomass training facility. Plumbers and heating engineers are able to learn the theory and practicalities of installing biomass heating systems. Significantly, CAT is an independent organisation meaning that a variety of different log, pellet and chip boiler manufacturers are taught.

Dynamic duo: CAT offers two courses – Biomass for Installers (HETAS H005) and Building Regulations for Biomass Installers (HETAS H005BR), a one-day course aimed at those who do not hold either an HETAS H003 or H004 qualification

My working week

Who: Larry Forgham, managing director at Otter South West

What: Otter South West is a plumbing and heating contractor based in Taunton, Somerset. The company specialises in the installation of air-to-water heat pumps, ground source heat pumps and solar thermal systems

Because we're in an off-gas area, we've seen the market for renewables grow dramatically in the past three years

Leading the line

Monday

I'm in the office at 7.15am to greet the team as they arrive. The company was established three years ago but I still feel it is important that I lead from the front and I'm there when the engineers come into work. We go through the plan for the week, which includes a mix of new build and refurbishment contracts. At the moment, our 20 engineers are split into two teams, one of which is dedicated to our social housing contract for Taunton Dean Borough Council. We have a five year contract which involves installing about 100 Daikin heat pumps annually, mainly Daikin Altherma Monobloc systems, in flats, bungalows and houses. Following the briefing, I catch up with our service engineers to review the weekend call-outs.

Tuesday

During the day I meet with our contracts director to review current jobs. A key part of the meeting is checking the quality of both our engineers and their work, which must remain high if we are to continue to maintain our reputation and grow the business. Next up is a meeting with our buyer to review the supply chain. Sometimes it can be difficult to maintain continuity of supply and unfortunately we have had to stop working with some companies because either the products weren't up to scratch or they couldn't guarantee supply.

Wednesday

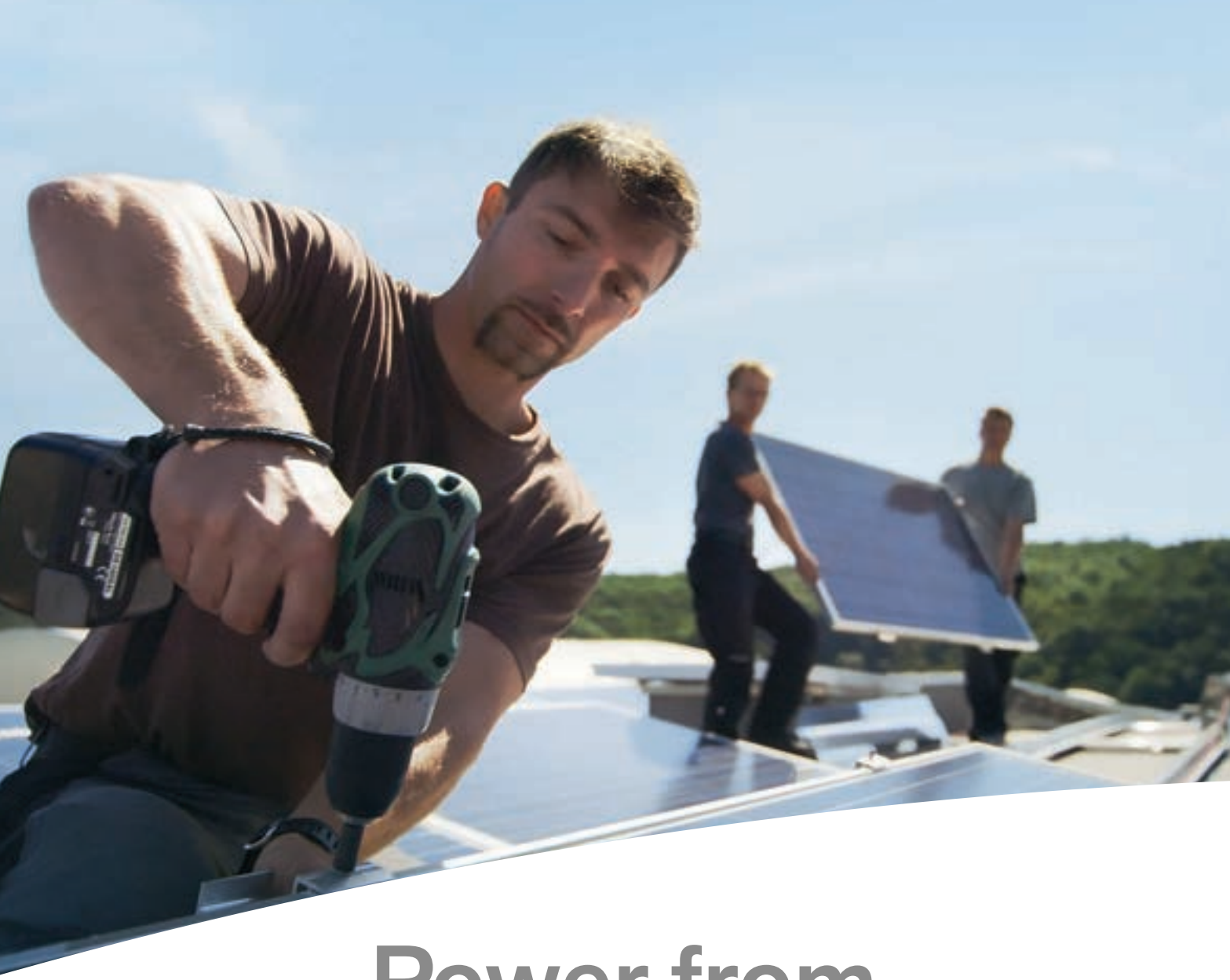
One of today's jobs is to review some tender documents that have come in. Although I'm the managing director, I'm very involved in sales and estimating and I spend some time looking at a couple of bids in the Taunton area, where we are proposing to install Daikin air-to-water heat pumps. Most of our work is within one and a half hours' drive of the office and, because we're in an off-gas area, we've seen the market for renewables grow dramatically in the past three years. In the afternoon I visit a housing association to discuss one of their upcoming refurbishment projects.

Thursday

Our website is being updated and I speak to the designer today. We're aiming to focus more on renewable heating and specifically air-to-water heat pumps. I'm also finalising our sponsorship of the local rugby club, the Taunton Titans. Towards the end of the day, I meet with Kerry, our office administrator, who has been running credit checks on a number of potential clients who have asked us to be on their tender list. As our reputation has grown, we're getting a lot more incoming opportunities and we're in the fortunate position that we can be selective.

Friday

Another early start as we're holding one of our regular toolbox talks at 7.30am before the engineers go out on site. As well as the regular Daikin-specific training we receive as a Daikin service partner, it's important for the engineers to keep up with the latest technological developments. Later in the day, I meet with PGL Training to discuss the progress of our two apprentices. They're working towards their NVQ Level 3, which includes air-to-water heat pumps. We're also about to take on an apprentice to work with our in-house electrician. As we had a toolbox talk today, its Otter curry night with the staff tonight – thankfully I don't have to work in the morning!



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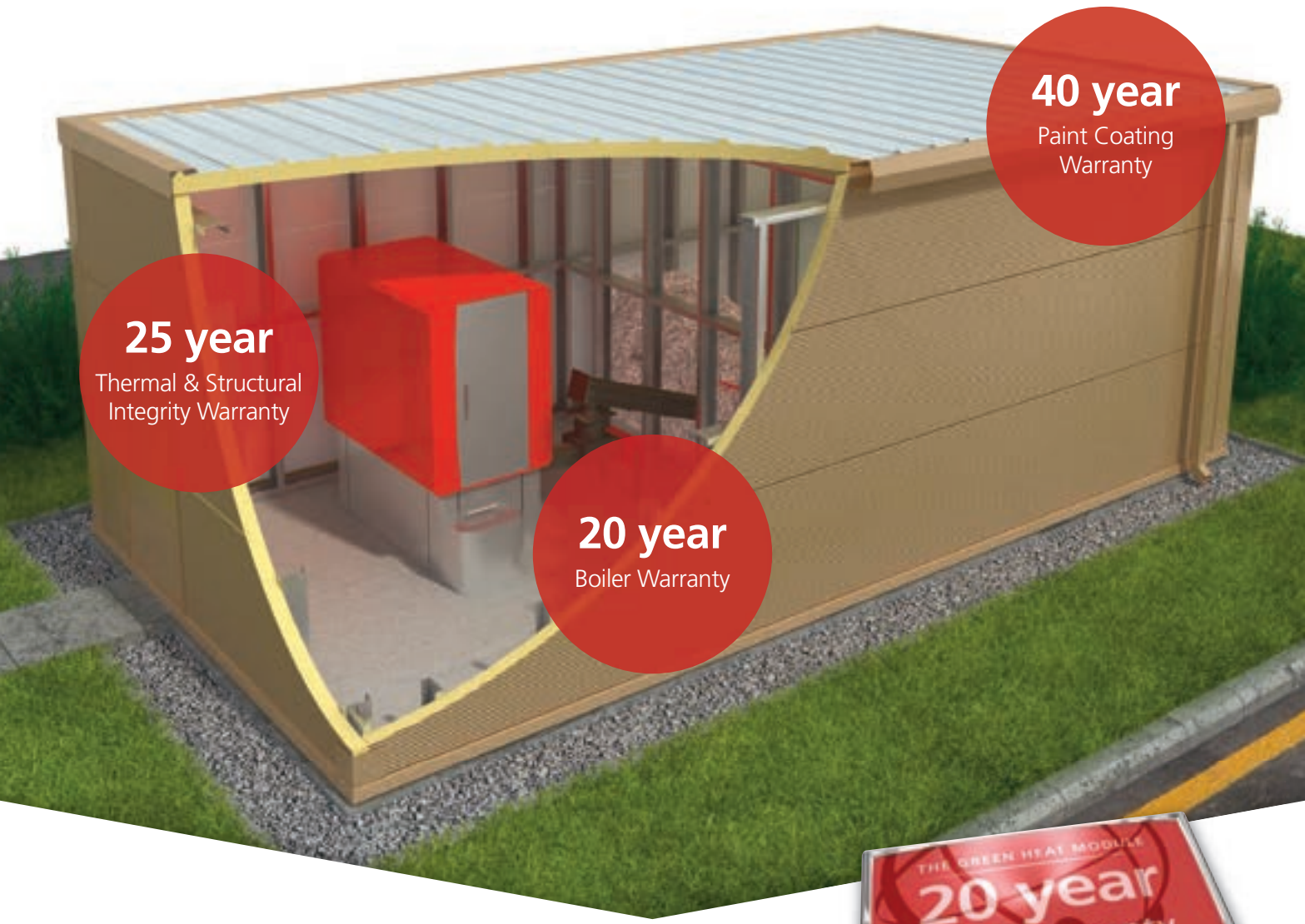

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