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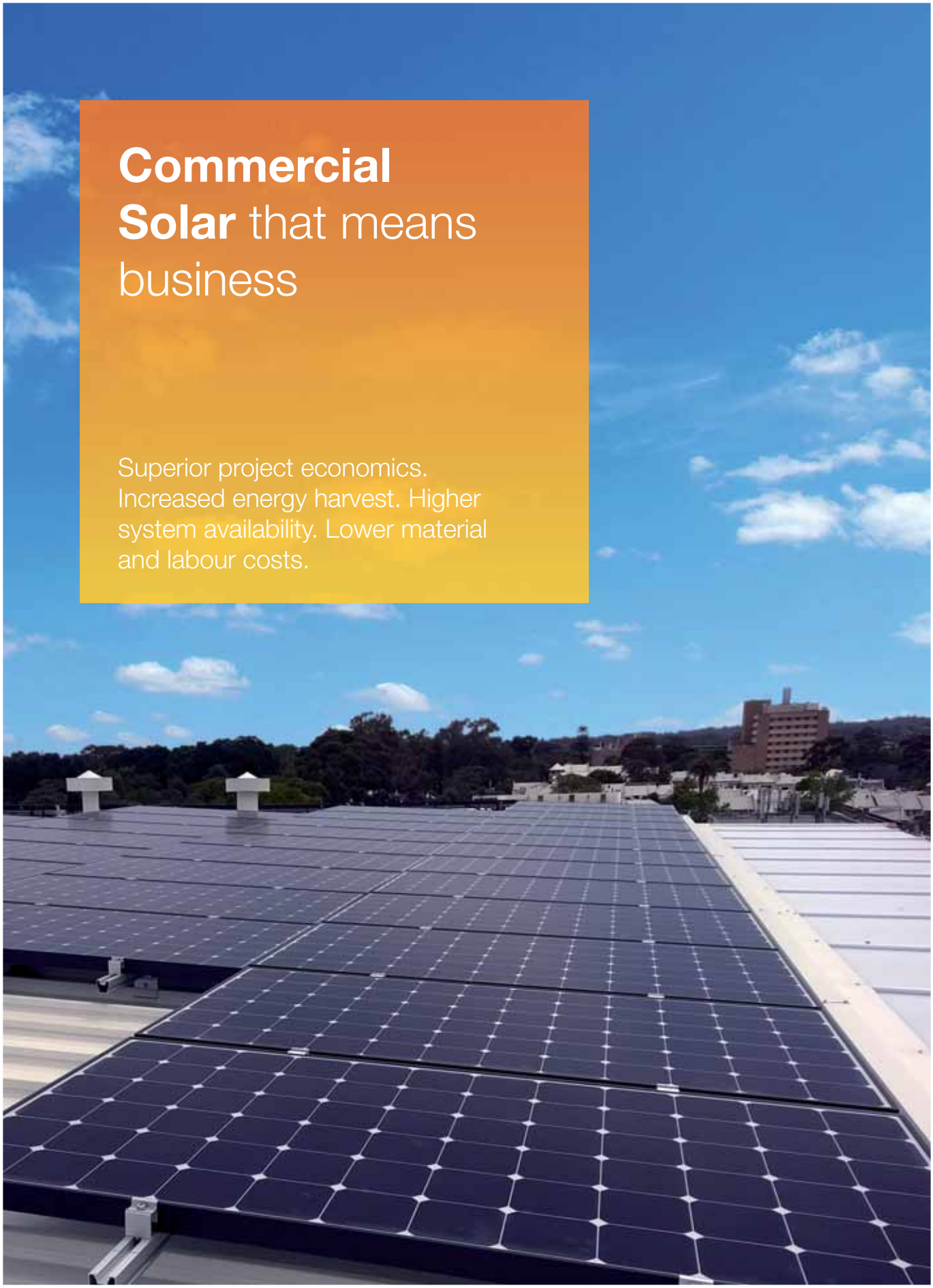
SOLAR THERMAL SOLAR PV BIOMASS HEAT PUMPS WIND HYDRO June 2015



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A United Kingdom?

The shock election result of a first outright Conservative victory for 18 years will have surprised a great many people across the country, not least the official pollsters and your humble editor.

But what is more eyebrow-raising is the Pandora's box of discord and division which David Cameron and his small parliamentary majority appears to have unwittingly opened, flying in the face of the promise of stable and surefooted governance which the coalition lacked, and the green energy sector so desperately craves.

Chiefly it is the future of Scotland and its place in the Union which has aroused the most curiosity. The SNP's spectacular gains north of the border have been greeted in some quarters by far-fetched visions of Highland conflict belonging to the age of William Wallace, and the fields of Bannockburn.

Back to reality, and the appointment of the familiar Amber Rudd as energy secretary has ameliorated some doubts over the Tory's commitment to fighting climate change, but it has not completely eradicated deep-seated fears that support for renewables will now fall precipitously down the list of ministerial priorities.

From the outside at least, the Conservatives still look deeply divided over the role of low carbon technology. At the very top of Ms Rudd's in-tray will be the unenviable task of fending off climate change-sceptic backbenchers desperate for fracking, and who see subsidy as an unnecessarily burdensome cost to a fragile economy.

Full industry reaction can be found by turning to pg8 but without a strong and united pro-renewables message, growing numbers of industry leaders predict the paralysis of investment and a serious threat to current deployment levels.

Clarification is also being urgently sought on a reckless manifesto pledge to halt any further construction of onshore wind farms.

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"Many in the onshore wind industry will be concerned at this electoral outcome"
Paul McCullagh, Urban Wind p8

Events

NAPIT EXPO On the road
16 Jun Sedgefield Racecourse
18 Jun Burnley FC
23 Jun Birmingham FC
25 Jun Center Parcs, Elveden Forest
30 Jun Chesterfield FC
02 Jul Regency Park Hotel, Berkshire
07 Jul Brands Hatch, Kent
09 Jul Vale Resort, South Wales
14 Jul Newton Abbot Racecourse

Intersolar Europe
10-12 Jun Messe Munich
www.intersolar.de/en/home.html

Heating & Renewables Roadshow
10 Sept 2015 Ricoh Arena, Coventry
15 Sept 2015 Westpoint Arena, Exeter
17 Sept 2015 FIVE, Farnborough
22 Sept 2015 RHC, Edinburgh
24 Sept 2015 Event City, Manchester
heatingandrenewablesroadshow.co.uk

Solar Energy UK
13-15 October 2015 NEC, Birmingham
http://uk.solarenergyevents.com

Ecobuild 2016
08-10 Mar London, ExCel
http://ecobuild.co.uk

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Vaillant expo opens its doors

Tomorrow's world: Visitors to Vaillant's new brand experience centre in Remscheid are offered a glimpse into future technological issues facing the low carbon heating sector, and the company's product solutions

Vaillant welcomed customers, dignitaries and journalists from across Europe to the opening of its new brand experience centre on 21 April, at its German HQ.

Located in Remscheid near Dusseldorf, Vaillant has been producing heating equipment at the site for more than 140 years.

The new 1,300m² expo venue provides visitors with a modern interactive forum to learn more about the brand and its products. Vaillant, which operates in more than 60 countries, stresses that it is more than simply a museum, and that employees will present the brand and its sustainable products in a more personal and hands-on manner.

CEO Dr Carsten Voigtländer felt it was fitting that such a historic manufacturing site was now playing host to technologies 'designed for tomorrow's world'.

He said: "We are at a historical site, but this is also where we want to shape the future. The heart of the Vaillant brand is here, and we want this heartbeat to be heard so we decided to open this centre as a new home for the Vaillant brand.

"From here we will be part of the future energy transition, and we hope to welcome thousands of visitors each year."

In addition to exhibits from Vaillant's past, visitors are encouraged to debate topical issues which the company's current product portfolio aims to address, such as energy storage and emission reduction.

Vaillant Group marketing manager, Tanja Brinks, added: "The Vaillant expo turns the history of our green brand, which spans more than 140 years, into a tangible experience. Our brand experience centre is a holistic concept and when people visit it, they will get to know our brand, our products and the people behind them."

Daikin's KEY to unlocking the market

Daikin has launched a new loyalty scheme for installers of its Altherma A2W heat pumps and other renewable heating products.

Daikin KEY is designed to both attract new installers to the market and reward existing members with free training, exclusive tools and other business support.

The scheme has three layers of membership and is firmly grounded in the findings of the company's own installer research.

Its survey of 200 installers showed that free product training, extended warranty and the kudos of being an 'improved installer' were amongst the most valued benefits of a loyalty scheme – all of which Daikin has incorporated in its KEY offering.

Interactive offering: The Daikin KEY loyalty scheme is fully mobile compatible to suit installers on the move

The first level of membership can be easily accessed by attending a free Daikin training course at one of its five UK training centres. This level offers installers free product training, a three year end-user warranty and co-branded marketing literature.

The second Associate member level can be achieved by attending further training courses, becoming installation certified and achieving a defined minimum turnover, which unlocks more company promotion tools. Each Daikin installation accrues points that can be redeemed for exclusive merchandise.

Partner members are entitled to all of the above plus preferential discounts, five year warranties and marketing hospitality opportunities.

"This is a fantastic scheme for Daikin installers and those wanting to do business in this arena. This partnership allows installers to grow their business and create great installations," said Nancy Jonsson, commercial director for domestic heating and renewables.

"The reaction from installers already live and accruing points has been extremely positive.

"The new KEY installers scheme is our way of saying thank you to each installer for their hard work and helping them to continue to develop A2W heat pump sales."

Heating & Renewables Roadshow signs up key supporting organisation

TrustMark has been confirmed as the key supporting organisation of The Heating and Renewables Roadshow 2015.

Heating, plumbing and renewable energy experts will gain access to the latest advice on consumer protection at this year's roadshow thanks to the involvement of TrustMark.

TrustMark is the government-endorsed quality scheme for all trades in and around the home and directs homeowners to reputable installers. A not-for-profit organisation, it is licensed by the Department for Business, Innovation and Skills and works with consumer protection groups such as Trading Standards, Age UK and the HomeOwners Alliance.

Simon Ayers, chief executive of TrustMark, said: "TrustMark is proud to be the key-supporting organisation of this year's roadshow. Over the last 12 months we have seen a 68 percent surge in demand from homeowners looking for reliable and reputable firms in this sector, so we are passionate about signposting them to the best local and expert installers.

"We will be bringing the scheme to the roadshow as a way of encouraging more good firms to get recognition for their technical skills, good trading practices and customer service ethos."

The Heating and Renewables Roadshow will be visiting five locations across the UK throughout September: Coventry, Exeter, Farnborough, Edinburgh and Manchester.

To register for your free ticket please visit **http://heatingandrenewablesroadshow.co.uk**

Final call for Heating & Renewables Awards

The countdown has begun to the entry deadline of June 30 for nominations in this year's Heating & Renewables Awards.

With four brand new categories, 2015 offers an even greater range of opportunities to be recognised for the excellent work done in the industry.

From projects and innovations, to training initiatives and apprentice of the year, the judging panel will be looking to reward best practice, exceptional performance and inspiring others.

You can either nominate yourself, or if you think someone is really deserving then why not encourage them to submit their application too.

Top comedian Jason Manford will host the black tie awards dinner at The Ricoh Arena on the evening on Thursday 10 September.

Paul Stephen, at Heating and Renewables Awards, said: "The awards have always been a hugely important date for the industry and this year is no exception. The fact we have managed to lure one of the most popular and well-liked comedians is a sure sign of our commitment in making the awards the most enjoyable and successful ever.

"There is so much talent and hard work in the heating and renewables sector and we want this effort to be recognised in the best possible way. The awards are free to enter and we have expanded the categories available to 17 – ensuring there is even more chance to learn from and recognise new achievements."

For a full list of categories and to request your nomination pack, please visit heatingandrenewablesroadshow.co.uk/awards/

For sponsorship and hospitality packages, please email **adam@andpublishing.co.uk** or **jonathan@andpublishing.co.uk.**

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Reasons to be cheerful

Brian Hegarty, partner in Ashfords LLP Renewable Energy Group, spells out why there is much room for optimism in the commercial rooftop PV market, despite some well-publicised barriers to uptake

We hear a lot about the problems associated with commercial rooftop solar but, like Ian Dury, I think that there are several reasons to be cheerful.

Grid parity

We are fast approaching the so called holy grail of grid parity. Many believe that grid parity will trigger a huge increase in the growth of commercial rooftop solar. The term 'grid parity' is not precise, having a number of definitions including the point in time when the cost of rooftop generated solar is the same (or less) than the cost of buying from the electricity grid. Some experts predict grid parity will be reached as early as 2018. It may not in fact be the holy grail but its rapid approach is likely to contribute to stability and confidence that will help stimulate the continued growth of rooftop solar generation.

Lift and shift

The government consultation on so called 'lift and shift' closed in 5 January 2015. Lift and shift will remove one of the perceived barriers to commercial rooftop solar, by allowing a business to take its rooftop array and Feed-in Tariff with it when it moves and thereby providing a greater certainty on return on investment – which may in turn decrease both the cost and availability of credit.

The government response (published on 20 March 2015) confirms that: "We will introduce transferability through secondary legislation later this year…" It is likely that there will be a four year lead in time to enable the administrative framework to be put in place. Importantly planning permission and grid acceptance will not be required to facilitate the move.

Cost reduction

The solar industry is moving and maturing very quickly whilst the cost of PV plant and equipment is reducing all the time.

Storage technology is improving all the time. Storage may well be the real holy grail for renewable energy, particularly since some areas have reached grid capacity. Western Power recently announced that for the time being the grid is closed to new large scale renewable energy schemes. Smaller commercial and domestic schemes should not be affected. Neither will it affect existing grid offers.

Returns on investment remain strong.

Brand recognition

Attitudes are changing with many well-known brands helping that process by 'going solar'. Most recently Marks and Spencers commissioned a 24,272 PV array (5MW) at its 900,000 square foot distribution centre at Castle Donnington for example. Sainsbury's, Apple and many other leading brands have also turned to rooftop solar.

Solar has a positive effect on the investment performance of commercial property. This was confirmed in a report in October 2014 by JLL. Rooftop solar can reduce running costs, (bear in mind that some predict as much as a 60 percent increase in the cost of industrial electricity by 2021), help meet government targets for improved building performance and increase property value through provision of additional income streams.

Stress release

The perceived tension between landlords and tenants is often cited as a barrier to the growth of commercial rooftop solar. In fact that tension (where it exists)

High and mighty: Commercial rooftops remain a largely untapped opportunity with most deployment barriers based on popular misconceptions, argues Brian Hegarty, partner in Ashfords LLP Renewable Energy Group

is often based on misconception and is easily overcome. With the Feed-in Tariff and power purchase agreements, rooftop solar is a classic 'win/win', landlords getting a good (often double digit) guaranteed return on investment and tenants getting cheaper electricity. Rooftop leases and power purchase agreements have become standardised with few variations on a theme and are generally quite simple documents easily agreed and completed. Technically the rooftop array presents little practical risk of damage to the building or conflict between landlord and tenant.

Lift and shift will remove one of the perceived barriers to commercial rooftop solar

Amber Rudd confirmed as energy secretary

The industry has welcomed **Amber Rudd**'s appointment as new energy secretary, following last month's general election result

An incoming majority Conservative government plus incumbent energy secretary Ed Davey's failure to retain his seat were both unexpected on May 08, but made a change in personnel a necessity.

Prime minister David Cameron's decision to hand the energy brief to Rudd has been praised for bringing continuity to the role as she had served as climate change minister within the team at DECC in the run up to the election.

The MP for Hastings & Rye is no climate change sceptic, and has gone on record to declare a need to curb carbon emissions and increase green investment.

Her appointment has provided a measure of reassurance to a sector doubtful of the Conservative party's commitment to low carbon energy in the wake of a manifesto pledge to curb the spread of onshore wind farms, and its unbridled support for fracking.

The renewable sector and green activists will now challenge her to resist pressure from some Tory backbenchers to rein in spending on green subsidies, or water down policies intended to decarbonise the economy.

"We welcome the appointment of Amber Rudd," says Phil Hurley, managing director at **NIBE**.

"With her experience and understanding of the area, she is well placed to work together with industry to build a cohesive and effective renewable heat strategy. The priority should be putting a firm budget in place to extend the RHI past April 2016."

The Centre for Alternative Technology's CEO, Adrian Ramsey, adds: "Rudd has shown support for home insulation and some renewables but if this is coupled with scrapping support for onshore wind farms, continued subsidies for fracking and North Sea oil exploration then she wont be able to achieve the decarbonisation that the scientific evidence shows we need."

Both the Solar Trade Association and RenewableUK have stressed the urgent need for an early signal from the government that low carbon energy remains a priority area to avoid a collapse in confidence from investors and a slowdown in deployment.

High office: Amber Rudd has been promoted to energy secretary, replacing the unseated Ed Davey

CEO of **UrbanWind** Paul McCullagh went even further pointing out his concern that the strong pro-renewables voice of the Liberal Democrats will now be absent from the corridors of power, due to the demise of the coalition government.

"Many in the onshore wind industry will be concerned at this electoral outcome," he says.

"We would urge to the new government to declare its hand over wind energy, giving the sector the clear and unequivocal support that it needs to flourish."

New face: Andrea Leadsom arrives at DECC as new climate change minister, a role previously held by Rudd

RenewableUK's chief executive, Maria McCaffery, says: "If the new government values green growth and is serious about stimulating the green economy, it needs to get behind this industry as swiftly as possible.

"For the renewable energy sector as a whole, the most important signal that the government could send to show that it's serious about cleaning up the way we generate electricity would be to set a clear 2030 decarbonisation target to provide long term certainty."

CEO of the **Solar Trade Association**, Paul Barwell, adds: "We look forward to working with Amber Rudd to make sure solar reaches its full potential. We need stable policy support and strong leadership on solar – just one final push could get rooftop solar to zero subsidy by the time this government leaves office."

In other ministerial appointments, Andrea Leadsom replaces Matt Hancock as climate change minister whilst Liz Truss continues in her role as environment secretary.

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Managing Director BayWa r.e. Solar Systems Ltd

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Partner organisation MCS presents its regular column for REI

Update to MCS heat pump standards

The Microgeneration Certification Scheme (MCS) has published an important update to the heat pump standards to align with the requirements of the Energy related Products (ErP) directive

ErP is coming into effect from **September 26 2015**. The ErP Directive will affect all heating and hot water products, with an output equal to or less than 400kW. The ErP comprises of two directives: Ecodesign and Energy Labelling.

Ecodesign will set a minimum energy performance and environment criteria for energy related products. Energy Labelling will see the introduction of a product label with an efficiency band between A+++ to G (with A+++ being the highest performing product). There will also be an energy label for the complete installed system.

As a result of these changes MCS issued the following updates on **May 06 2015**:

- For MCS Contractors: MIS 3005 Issue 4.3
- For MCS Manufacturers: MCS 007 Issue 4.1

As a result of these changes, manufacturers will need to work with MCS Certification Bodies to provide additional test data for all certified products. This data will be used to calculate the following information for all MCS certified heat pumps:

- Seasonal Co-efficient of Performance (SCoP) – electrically driven heat pumps; or
- Seasonal Prime Energy Ratio (SPER) – gas absorption heat pumps.

As soon as this data is available, MCS will list the information on the MCS website. MCS Contractors will then be able to use this information when calculating the performance of heat pump systems in accordance with MIS 3005 Issue 4.3.

MCS Contractors will continue to use the Heat Emitter Guide (HEG) to calculate the 'likely SPF' for installed systems (in accordance with MIS 3005 Issue 4.1). However once SCOP/SPER data is available, MCS contractors will also have the option to use this data instead of the HEG 'likely SPF' as outlined in MIS 3005 Issue 4.3.

For manufacturers, all new heat pumps entering the market place from **26/9/2015** will be required to comply with ErP. Existing products will be required to undergo additional testing to demonstrate compliance with ErP. It is recognised, that MCS Contractors may have existing stock of products that are not compliant with ErP to use up after this date. Therefore MCS has allowed a 6 month transition period, to use up any existing stock. From **26/3/2016** MCS Contractors will only be able to install ErP compliant products which meet the requirements of MCS 007 Issue 4.1.

If you should have any questions regarding the changes to the MCS Standards, please contact the MCS Helpdesk on **020 7090 1082**

Opinion

Pollard's Patter

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

By the time you read this we will all know the outcome of the general election

Whatever the outcome, it will be important for the future of the renewables market. As things currently stand, the RHI has a budget until 2016.

However, as we all know, a general election can change things. A returned government will see a new mandate and, in all likelihood, some personnel changes as a catalyst for change. Of course, this needn't be a bad thing. We may see some new or improved initiatives to encourage the take up of renewables. But, by and large, what industry really cries out for is stability and consistency.

We make investment decisions which are based in forecasts for 1-20 years or even longer. Installers must make decisions around training and accreditation which require a healthy market to justify the costs involved. Manufacturers will need to justify the return on substantial capital investments in facilities, plant and people. Merchants need security that investment in stock, training, marketing and staff can be rewarded by market opportunity. Lastly, consumers need to understand that decisions they make will not be undermined financially or practically.

I know that change is inevitable and can sometimes be really beneficial but a consistent 'direction of travel' for the benefit of all would be my plea.

DEHN Protects PV Systems

Reliable power supply thanks to lightning and surge protection

In the future, wind, water, biomass and of course the sun will ensure that the lights do not go out in industrial plants and private households.

Photovoltaics (PV) are on the rise and a key pillar of the globally growing electricity supply from renewable energies.

A lightning protection system provides optimal protection due to the interaction of:

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- Internal lightning protection including lightning equpotential bonding, surge protection and separation distance.

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"The UK faces a shortage of 450,000 trained engineers by 2020"
Stuart Gadsden, Daikin UK p23

The market for non RHI biomass appliances

Robert Burke, HETAS, makes the case for the inclusion of more wood burning stove appliances under the RHI

Although the domestic RHI has been a great success for the biomass industry, there is one area which can't get support from the RHI schemes. This is namely the wood burning stove industry. In terms of renewables, they use wood and biomass, but are excluded from the RHI. The only appliances in this sector which are eligible for RHI support are pellet fired stoves with boilers if they have MCS approval.

This leaves all the other types of stoves on the market. These range from quite simple dry stoves through to modern highly efficient and clean burn stoves and stove/boilers. Some can be used on sealed systems and the range of options, sizes, and control choices has been developed to the stage where many of the modern appliances offer exceptionally high efficiencies. The range available will satisfy everything from the casual user to those with serious intent to save carbon and gain some real fuel independence from their gas, LPG and oil suppliers.

It's estimated that around 180,000 stoves are sold in the UK every year

The stove market has been incredibly buoyant over the past four or five years with a 50 percent increase over the last five years and sales are still strong. It's estimated that around 180,000 stoves are sold in the UK every year. The strong stove market is driven by consumers looking to save money on their fuel bills, coupled with the introduction of more modern and efficient designs. The Stove Industry Alliance estimates that wood burning stoves could account for 10 percent of the government's carbon reduction targets by 2020, and there is a strong argument for including them in the domestic RHI.

Anecdotal evidence suggests that consumers are now using wood burning stoves rather than switching on the full central heating system which in rural areas may be running on expensive oil or LPG. Modern wood burning stoves use clean burn technology, resulting in low CO emissions when using high quality wood with a low moisture content.

Many of the stoves currently being installed are replacing older, less clean burning and efficient models so there are real benefits to air quality and to the efficient use of fuels as a resource. There are also great benefits in using stoves listed on the DEFRA smoke control website as these have been tested with the fuels they use and are proven to have reduced emissions. Most towns and cities are smoke control areas, and any stoves installed in those areas must be a DEFRA exempt one, and because these are now widely available it's possible that more people are installing stoves in urban areas as well as in traditional rural homes.

Wood burning stoves could account for 10 percent of the government's carbon reduction targets by 2020

The UK carbon floor price

Gordon Moran, writing for the European Energy Centre, explores the beneficial impact of the UK's carbon floor price on the renewable energy sector

Whilst the makeup of the new UK government will have various implications for the renewables sector, another legislative change recently came into effect that will also have very tangible effects.

In 2013 a 'carbon floor price' was introduced, meaning that businesses using fossil fuels to generate electricity are required to pay 'carbon price support' rates. The measure was designed to set a minimum price, relating to emissions from fossil fuels, which would rise on an annual basis to encourage lower carbon sources of electricity generation.

The carbon floor price recently doubled from £9.54 to £18.08 per tonne of CO2, which is likely to affect the profitability of the most carbon intensive form of electricity production – coal – which provides a substantial proportion of the UK's overall electricity production. The rising price of carbon factoring in the cost of the pollution from dirty power plants means that it is likely that most UK coal-fired power plants will be taken offline this year. This will lead to increasing demand for new power generation from low carbon sources to fill the gap in energy generation, plenty of which will come from renewable sources.

It is also unlikely that any new government will repeal the rules. This is because ensuring continuity in UK energy policy is vital to maintaining investor confidence in the UK energy sector.

All of these factors mean that the carbon floor price will help ensure strong demand for renewable energy and reduce carbon emissions.

To learn more about renewable energy and energy efficiency through learning courses visit **www.EUenergycentre.org**

Two of a kind

Liz MacFarlane, Zenex Solar, provides an update on how things are going since the acquisition of Zenex by PV distributor Segen three months ago

Don't get me wrong, there have been a few culture shocks to overcome as you'd expect. Zenex and Segen have different ways of working and the aim has always been to learn from each other and implement new processes to benefit all our customers.

Here at Zenex, we are now utilising our very own online sales software as well as being able to offer all of our customers access to the revered Segen PV design and quote system which enables you to configure a complete PV installation. All things we could never offer prior to becoming part of the Segen group. Historically, our team did literally thousands of quotes on your behalf, all by hand.

These technological enhancements of the Zenex business complement our reputation for providing individual, hands on customer service which we pride ourselves on. The new IT driven infrastructure enables us to provide the support we're known for but much more efficiently and importantly – with less paper.

The core team here at Zenex remains the same. I am still Zenex sales director as well as now holding a position on the Segen board of directors. We are still based in Yorkshire and delivering nationwide but now share Segen's warehouse in Bolton. You can still pick up the phone and ask us to quote on your behalf, but now we have more scope and support to help you win your projects.

The summary is that Zenex is now supported by a sophisticated IT structure as well as the Segen team and both businesses now provide a multi-faceted service and the widest portfolio of products in the industry.

CURRENT AFFAIRS

Guest columnist **Bill Wright**, head of energy solutions, Electrical Contractors' Association pens a brief letter to new energy secretary Amber Rudd

Welcome to your new role, one of the most important within the UK government. You are ultimately responsible for 'keeping the lights on', keeping the price down, reducing our reliance on energy and reducing our emissions – a very tall order.

Energy should be as inexpensive as possible, a natural enough request. Although the more expensive the energy the less that will be used and the more efficient we will become at using it. This is very difficult to achieve to the satisfaction of all, especially as we are committed to energy and emission reduction.

The need to provide renewable energy should be one of your first priorities. Solar PV, wind, biomass, heat pumps and hydro systems are all within the portfolio of power sources used in the UK. Existing policies have provided a boost to this provision but there has not been a stable policy that would encourage long term investment on a scale sufficient to provide the energy needed to meet our commitments. There has been a stop – go policy in the past exemplified by that towards the PV industry.

The industry is now recovering from sharp tariff cuts but is now at a much lower level. Now we have more uncertainty as the emphasis from government is towards rooftop solar rather than solar farms which were previously encouraged.

The same can be said of the wind energy business where the emphasis switches between land and offshore based systems.

The RHI has been better managed with tariffs people understand and reductions in tariffs according to the growth of the industry. More of this please. I wish you every success in your role.

Hidden extra

Steve Pester, BRE, reflects on the increasingly attractive prospect of BIPV

An interesting conference on Opportunities in Building-Integrated Photovoltaics (BIPV) was hosted by the Knowledge Transfer Network a few weeks ago.

When I first saw the invitation, I thought that to host such an event was a brave move, given the state of the BIPV market during the last five years. We have seen prolonged and fierce competition amongst module manufacturers, many of whom have gone to the wall, coupled with austerity measures at home and abroad. Against this kind of background, BIPV is often considered to be something of an unnecessary luxury. But it is not just that.

There seems to be a lack of understanding amongst non-industry people about what BIPV actually is; many assuming that panels on a frame on a roof must be 'building-integrated'. Once you have cleared up that misunderstanding, there's the range of BIPV product types to explain: roof tiles, glass facades, façade infills, windows, atria, sunshades, etc. The whole thing is rather complicated unless you are in the business.

Can architects help? Well, it is their reputations on the line if a roof covering lets water in or changes colour after 12 months, so with little information on BIPV as a reliable building product, who can blame them if they are not rushing to specify it?

The cost issue is partly perception (standard PV 'payback' calculations are not appropriate). BIPV will always be more expensive than standard modules, but the recent falls in the price of PV grade silicon mean that some BIPV products have also seen price declines. The new generations of PV materials, whilst yet to prove themselves in a conservative construction industry, promise even larger cost savings.

DAIKIN

Strong support is KEY

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Tools
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TECH TALKING

Poor economics limit market growth

Heat pump specialist **Bob Long** calls for more efficient models of the technology to take on low cost natural gas.

I have been following the Heat Pump Group on LinkedIn for some time now, and a recent topic caught my interest discussing the low number of heat pump installations since the advent of the RHI. Numbers are certainly below those anticipated for the first quarter of this year.

This news will not be well received by installers, and I would certainly be the first to admit my own disappointment regarding the slow growth of the heat pump market. With the exception of householders who have a keen interest in all-things-green, the installation of a heat pump system will always come down to economic viability and, in this regard, the UK market poses some difficult challenges to our industry.

The UK market potential for heat pump technology cannot be compared to other markets where heat pumps have featured successfully for many years, simply because the UK has a comprehensive natural-gas grid, and relatively high electrical tariffs.

I would be the first to admit my own disappointment regarding the slow growth of the heat pump market

To create some illustrative comparisons we can assume that the cost of natural gas is 5p/kWh and electrical energy is 13p/kWh. A heat pump with a COP of 3:1 will provide thermal energy at a cost of around 4.5p/kWh and compares favourably with a natural gas boiler producing 90 percent efficiency at around 5.5p/kWh.

With a heat pump installation costing significantly more than a fossil fuel boiler, customers will naturally want to see an operational saving, and a saving of only 1 pence per kWh of energy delivered is probably the fundamental reason for the low number of installations.

Although the extra cost of fitting a heat pump is supported by the RHI payment, the complex process and low payments for small capacity units often means that the financial gap is not completely met.

Britain's carbon reduction strategy cannot ignore around 20 million homes as potential and valuable contributors to reduction targets, so either electrical charges for heat pump installations must fall (unlikely), or heat pump efficiency must increase.

At this time, the UK represents a very small proportion of the global heat pump market and therefore it is not surprising that heat pumps are not generally optimised for UK conditions. The UK market needs to have a more efficient design of heat pump, specifically developed to compete with the price of natural gas.

The UK market needs a more efficient design of heat pump to compete with the price of natural gas

A seasonal performance factor set at a higher level would provoke manufacturers to produce some overdue improvements in heat pump design and efficiency. Enhanced COPs approaching 4:1 would create a price differential close to a 2p/kWh saving, which should result in an annual reduction of around £300.00 from the householder's heating budget when compared to natural gas, and even higher savings when compared to other fuels.

Over the anticipated lifespan of the installation, savings of at least £4,500 could be made.

If our industry can regularly boast impressive figures like this, and deliver them, the heat pump industry will naturally grow at a faster rate.

Two minutes with . . .

Who are you?
David Hall, national sales manager for Grant UK

What do you do?
My day to day role means I'm talking with installers, merchants and specifers about our renewable range including condensing biomass boilers, heat pumps and solar thermal systems.

Where are you?
I live with my wife Kay and children Abi and Sam in Ludlow, Shropshire which is a beautiful part of the country. I have both solar thermal and PV installed at home, as well as a wood burning stove.

How's business at the moment?
At present business is very good but also very challenging. Grant is launching new products throughout 2015 – including a new domestic condensing biomass boiler, called the Vecta. We also have the Grant Accredited Pathway Scheme (GAPS) which makes MCS registration and its administration burden a lot lighter for installers.

How could business be better?
There is little doubt that there is uncertainty created by RHI payment movements and this makes convincing installers to become MCS accredited a lot more challenging. I hope the new government acts to take away these market uncertainties and encourage the take up of renewables.

What's the best business advice you've ever received?
The best business advice came from my father who said to me: "Winning is as much about attitude as aptitude, especially when the chips are down."

How are you going green?
We feel it's important to practice what we preach and our environmental processes are audited in line with ISO 14001. We also have two Spira biomass boilers heating our Devizes HQ.

Q&A

PHILIP HILDRUP

Right2Improve

REI: What have you got planned for 2015?
PH: The main focus for me for 2015 is to introduce one of our manufacturers' new products – the Blueberry Smart Hub. It allows the customer to monitor, control and budget what they are spending on their heating and hot water. As a distributor of the Blueberry Smart Hub, we are able to not only provide the consumer with a great product, but it will also help us build a relationship with them by communicating via the hub to make further savings and tweaks.

What do you see as the growth area for renewables?
I believe that one of the biggest areas for growth in renewable energy lies in thermodynamic technology, which we supply. The main benefits of using a thermodynamic system when compared to solar thermal is that it does not require any maintenance, the system works day and night as it uses the ambient temperature to heat the hot water, and a thermodynamic panel does not require a south facing roof.

How is your company cutting its carbon footprint?
Currently our head office in Chelmsford has ten PV panels and one thermodynamic system. This year we will be installing the Blueberry Smart Hub which will enable us to analyse and budget how much we want to spend on our central heating.

Philip Hildrup is sales director at Right2Improve

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A&D PUBLISHING

Solar's least loved technology

Despite having been around for almost 40 years, photovoltaic thermal technology has struggled to gain much ground in the renewables market. **Michael Goddard**, director of house builder Caplin Homes, asks why PV-T is not more popular and if it has a future in the UK?

PV-T has the potential to change the renewables sector, not least because it requires less roof space than separate PV and thermal arrays. But it isn't without problems, mainly in its practical application.

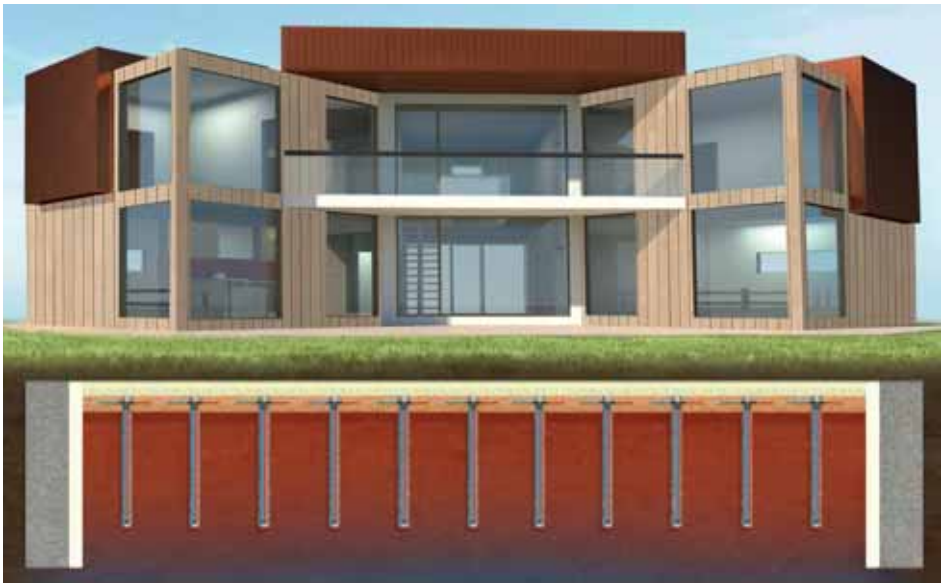
PV-T panels can generate up to three times as much heat as electricity. However, the majority of this would be created during summer when minimal space heating is required. For most domestic and commercial applications, therefore, PV-T generates far more thermal energy than could viably be used.

While this would also be the case with a solar thermal array, it is a less cost effective choice for homeowners, as the same government incentives are not available. Although PV-T is eligible for the Feed-in Tariff (FiT), the technology currently only qualifies for the Renewable Heat Incentive (RHI) in non-domestic settings. However, it is highly probable that a domestic agreement will follow suit soon.

The most significant hindrance for the success of PV-T has been a lack of an economical method of thermal energy storage

PV-T panels also have in internal contradiction in that they are required to maximise their temperature to heat water yet produce less electricity the warmer they get.

Up until now, the most significant hindrance for the success of PV-T has been a lack of an economical method of thermal energy storage. Over the last six years we have been working with renewable energy specialists to develop a system that can cost effectively achieve zero carbon for new build homes through storing excess heat – a system that relies on PV-T panels.



In the bank: Generating three times more heat than electricity, often at times of low demand, PV-T has a brighter future in the UK thanks to the Zero Carbon Solution using interseasonal Earth Energy Bank thermal storage, argues Michael Goddard of Caplin Homes

The Zero Carbon Solution (ZCS) utilises a patented interseasonal heat store, the Earth Energy Bank (EEB), which is connected to the internal heating system via a two-way heat pump. Housed between a building's foundations, the EEB's design utilises the poor thermal conducting quality and high thermal capacity of the ground. Furthermore, the heat pump is eligible for the government RHI.

The storage system itself consists of a matrix of bore holes that are just 1.5 metres deep. Unlike the collectors used with ground source heating systems, the EEB doesn't require any long trenches or specialist deep drilling equipment, reducing installation costs and making it more practical for larger-scale developments.

Once the installation is complete, thermal energy generated by the PV-T array is used within the building to meet any immediate heating and hot water requirements, while electrical energy powers the system's heat pump with any excess available for lighting, ventilation and may also be used for additional water heating via an immersion coil.

Energy flows are carefully monitored to determine immediate need and control space heating. If both the heating and hot water systems are up to temperature, the ZCS redirects the additional heat to warm the EEB. During the winter months, the system can draw upon the stored heat to warm the building and provide any hot water needed.

With the electrical energy generated from the PV-T array enough to power the whole system, buildings using the Zero Carbon Solution are able to remain entirely self-sufficient for space heating and hot water all year round. Such applications would be suitable for most new build domestic properties, as well as many commercial buildings, and are often more cost effective than their alternatives in terms of carbon reduction and ROI.

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Beating the system

2015 sees Voltec Solar celebrate its fifth anniversary. **Marcus Schaefer**, co-founder of the European PV manufacturer, reflects on what has been a turbulent time for the industry, but a prosperous one for the company

The PV industry has come through more than four years of severe consolidation which is not yet completely over.

So celebrating our fifth year anniversary at Voltec Solar, EU manufacturer of high class PV panels based near Strasbourg, means we had to fight our way through right from the start. Those 'easy' days for PV manufacturers where demand was higher than supply came to an end just as we started in 2009.

Therefore, right from the beginning, Voltec Solar had to demonstrate its fighting spirit in a market of oversupply and falling prices where selling based on arguments rather than just price was, and still is, the challenge.

Despite the extremely tough market conditions, Voltec Solar managed to increase its turnover in 2014 by 130 percent compared to 2013, and invested another million Euros to keep its production methods up-to-date.

Here are some of the key arguments why you should choose our PV panels:

- 20 year product warranty – Voltec was the first to offer this worldwide – alongside 25 years of performance warranty
- European production using German-made equipment for German-engineered PV panels
- Financial stability due to mid-size and integration of Voltec into a group of companies with activities other than PV

Focusing purely on the UK, Voltec has been present here since almost three years ago. We are very thankful to our UK distributors: Wagner Renewables in Chichester who first brought Voltec into the UK, Solen Energy UK and Greentrader 24 in Liverpool, PV Kits Direct in Ipswich and Tritec UK in Arundel.

With the help of these distributors and possibly further distributors signing on, we are striving to increase our market penetration as a trusted partner.

Trend setter: With the bursting of the PV bubble coinciding with Voltec Solar's inception, the company has rapidly expanded amid worsening market conditions, says co-founder Marcus Schaefer

Swimming at the deep end

Entry-level heat pump systems and hybrid technology could be the approach the HVAC industry needs to overcome the current skills shortage in the renewable heating market, says **Stuart Gadsden**, renewables and heating product manager at Daikin UK

A recent survey by the Institution of Engineering and Technology (IET) found that 76 percent of companies are struggling to recruit senior engineers with sufficient work experience. This prevalent issue can be seen clearly within the HVAC industry, which has suffered with a severe skills shortage for several years.

Following the recession however, rapid growth in the construction and renewable industries has seriously impacted on the ability to deliver projects on time and to budget. With a report by EngTechNow stating the UK faces a shortage of 450,000 trained engineers by 2020, companies like Daikin UK have called on the government to promote apprenticeships and graduate level careers in the HVAC industry.

The UK faces a shortage of 450,000 trained engineers by 2020

Although this may go some way to improving future recruitment rates, business owners within the industry need to increase the professionalism of their current engineers in order to have a more immediate impact.

Innovative HVAC manufacturers are already combatting this issue with new practices; for example Daikin UK hires new apprentices every year as well as recently investing £1.1m in a new national training centre based in Woking, Surrey, with the aim of providing experience and continuing professional development (CPD) for engineers. Not only does this allow for installers to have the chance to work directly with fully functioning products in a controlled environment, it also enables them to enter into classroom-based and online training courses.

However, with 38 percent of companies not having a dedicated training budget and a lack of available time to attend training courses, manufacturers need to consider other options. Simpler 'stepping stone' products that do not require specialist F-Gas qualifications such as the Daikin Altherma Low Temperature Monobloc could be the solution to installers swimming in the deep end.

Ideal for new installers, Monobloc products require no refrigerant handling during installation making them an easy and cost-effective way to enter the renewables market. With sealed refrigerant circuits and only requiring a water connection, an installer can fit the Monobloc system after attending the manufacturer's training course, eliminating the need for additional training courses.

Suitable for a wide range of properties, from new build to existing homes, monobloc systems are designed for smaller properties where space is at a premium.

With the outdoor unit containing all necessary hydraulic components and requiring simple wiring, this monobloc system also reduces the risk of errors during installation, helping increase the confidence of installers new to the sector.

For more experienced Registered Gas Engineers who already have F-Gas and MCS accreditation, Hybrid heat pump systems offer an easy route into the renewables market.

Taking up the same space as a conventional boiler, the Daikin Altherma Hybrid heat pump system combines a gas combi boiler with air-to-water heat pump technology. Using familiar boiler technology provides installers with confidence that the system can be easily fitted after one day of training. Further improving installation, Hybrid technology does not require new radiators, making the process much faster and less disruptive.

Due to the current growth in the renewable heating market combined with the prevalent skills shortage in the industry, there is a gap in the market for both new and experienced installers who are considering stepping into renewables.

Well spent: Daikin UK has responded to the predicted skills shortage in the HVAC industry by investing £1.1m in its new national training centre in Woking

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Is all training created equal?

With such emphasis being placed on training to secure strong and sustainable industry growth, **Silvio Spiess**, founder and CEO of Innasol, asks what exactly are the signs of a good training course, and how can an installer know that it is the right course for them?

The first thing to investigate, before applying to attend any course in any industry, is to ensure that the course level and the delegate's professional development are closely aligned. This is often a stumbling block, an unnecessary one, which can be easily avoided by taking the time to speak to the course leader to clarify the entry requirements and more importantly the training outcomes.

Fuelling growth: Innasol reports that training demand is highest for its biomass courses amid strong uptake in the domestic market, says founder and CEO Silvio Spiess

End game

A training course, especially one in a practical industry, should also offer clear objectives from the outset. Delegates should have a clear idea of what they are going to learn and how the learnings will be applicable in their everyday jobs. This point should not be underestimated: training is only useful if it can be clearly and safely applied afterwards.

Practical and theory

The methods of teaching should be varied throughout the session to ensure engagement as well as to encourage learning. These methods should, in today's technological environment, include at least some interactive elements to ingrain the teachings and encourage practical application outside of the session. Discussing and debating material is also really important to receive a rounded view of the training topic and to allow delegates to learn from their peers' experiences.

Learning by example

Any reputable course should itself be led by trained professionals who have a solid base of knowledge. This is gained through experience working in the renewable heating industry or experience of working with the products in question. Our own training facility uses Innasol technical engineers to deliver product specific training, due to their deep technical knowledge. Regardless of where training is undertaken, however, it is always wise to find out the background of your prospective trainer ahead of time.

Forward thinking

Across the board, we are seeing that renewable heating professionals recognise the need for formal training qualifications and perhaps unsurprisingly, biomass training is seeing the highest demand amongst professionals in our industry. At Innasol, we are seeing particularly high applications for our BPEC solid biomass course. This is due to the regular tariff degressions on the non-domestic side of the RHI scheme, which are pushing many companies to take on more domestic installation work. These require more formal qualifications, and delegates are responding by investing in their long-term futures within the sector.

There is an industry-wide trend which has recently become clear of many companies entering directly into the higher levels of training. These more advanced modules go beyond standard 'manual' teachings and act as a platform for professionals to discuss, query and debate to address high-level concerns.

The gravitation towards higher qualifications is reassuring – it demonstrates that businesses recognise the importance that training has on the long-term growth of the industry and are willing to invest in that. It is a positive sign that the renewable heating market is maturing well and will continue to do so.

Top customer tips for running biomass

Every responsible installer should give the following heads-up to their customers, says **Michael Wright** of Yorkshire Heat Pumps

Plan pellet deliveries
Monitor the fuel levels in the pellet store and order in good time to avoid running out – especially in cold weather.

Michael and Kate Wright of Yorkshire Heat Pumps

Storing bagged pellets
Bagged pellets are cheaper bought in bulk but if you buy a pallet (96 bags or just under a tonne) you need somewhere dry to store them; ideally not far from the boiler so you don't have to lug them too far.

Take care if you shop around
From October 2015 pellets must be sourced from a supplier that meets RHI scheme sustainability criteria and evidence of this may be required.

Plan routine maintenance
While emptying the ash can is a simple task and can be done at any time, the boiler needs to be turned off and cooled before you start cleaning.

Be ready for some mess
Cleaning involves getting rid of dirt and residues that build up inside the boiler and can be a little bit messy. Some customers consider getting a high temperature vacuum cleaner to make the process as quick and easy as possible.

Be aware of your long-term obligations
Remember to check the life of the carbon monoxide alarm – most models last seven or 10 years.

And for a non-domestic installation:

Schedule your meter readings
With a narrow window of just one week to submit your quarterly meter reading, set a calendar alert and arrange for someone else to take and submit the reading if you are going to be away.

Plan re-calibrating your meter
Most heat meter models need re-calibrating every 10 years. Check when it is due and plan the re-calibration carefully, as it will need to be removed and sent off to the manufacturer or other calibration body and need reinstating ahead of the next meter reading.

The gathering storm

Medium wind manufacturer Norvento strongly supports RenewableUK's call to increase tariff degression capacities in the upcoming FiT review, or risk a devastating slump in deployment, reports director of UK business development **Ivo Arnús**

The encouraging growth of the UK's Feed-in Tariff (FiT)-supported 15kW-500kW small and medium wind market may be undermined in the coming years by an overly aggressive tariff degression system that has not given the industry time to enact a proportional reduction in supply chain costs.

This assertion echoes the findings of the recent RenewableUK 2015 Small and Medium Wind UK Market Report.

Norvento's nED100 wind turbines mainly operate in the 15kW – 100kW (inclusive) FiT band – although may sometimes operate in the band immediately above (100kW+ to 500kW), if more than one turbine is installed on site. While both bands have experienced growth this year, the higher band has seen an eightfold increase in capacity over the past two years, which most likely reflects the availability of a more generous incentive in this period.

However, the consistent growth of the 15-100kW band since the inception of the FiT scheme in 2010, coupled with the recent increase of the 100-500kW band, demonstrates that the medium wind sector as a whole is the real success story of the UK distributed wind incentive scheme and has become a significant part of the rural economy. The financial boost provided by the FiT regime has played a key role in supporting this growth.

Unfortunately, the process of tariff degression, which has been in place since 2012, has taken place at a rate that has not been conducive to establishing economies of scale in medium wind.

The Feed-in Tariff is a finite resource – and is running out faster than the industry can keep up with

Since the introduction of the small and medium wind Feed-in Tariff in 2010, the industry has managed to reduce the CAPEX costs of a standard medium wind project by approximately 11 percent on average. In the same period, tariffs have degressed by 35 percent on average (according to RenewableUK data for the 15-500kW range). A further tariff degression took effect on April 01 2015.

In light of this imbalance, there is a clear requirement to adjust capacity thresholds and thereby slow down the overall rate of tariff degression before the industry sees an adverse effect on turbine deployment and overall growth. Norvento has joined RenewableUK in urging the incoming UK government to take the opportunity to review these thresholds this summer.

The FiT regime in medium wind has been under a lot of scrutiny of late, but arguably not for the right reasons.

Recent media reports regarding the practice of turbine de-rating have given the impression that there is a generous support mechanism in place, and, while this might be the case in some specific FiT bands, we should not generalise across the whole scheme, as, in reality, the Feed-in Tariff is a finite resource – and is running out faster than the industry can keep up with.

If the UK medium wind market is to sustain current momentum and maintain its industry-leading status, it's crucial that firms throughout the supply chain are given time to develop economies of scale and thereby lay the foundations for future success.

Standing still: The UK medium wind market will grind to a halt if cost reduction cannot keep pace with deep FiT degressions, says Norvento director of UK business development Ivo Arnús

Perpetual motion

Darren Riva, head of sales, Green Finance at Siemens Financial Services in the UK, introduces the company's joint finance initiative with The Carbon Trust – EEF – as a key tool to sustaining growth momentum in renewable energy deployment

Since the UK's official agreement with the EU in 2007 to source 15 percent of its energy from renewables by the end of this decade, the country has been making considerable progress in promoting low carbon technologies.

For instance, solar PV's rise is well-documented as it has enjoyed significant take up in recent years. At the close of 2014, the nation's solar capacity had almost doubled, from 2.8 GW in 2013 to 5GW, making it a record year for solar installations.

Government incentive schemes such as the Renewable Heat Incentive (RHI) and the Feed-in Tariff (FiTs) have certainly played an important role in helping stimulate take-up of renewable energy. Equally important, however, has been the engagement of the key stakeholders in the renewable energy industry, in particular equipment suppliers, in driving the adoption of cleaner, greener energy to a broader customer base. Armed with their specialist knowledge and technology expertise, renewable energy equipment suppliers can adopt an even more proactive approach – not only advising customers on the best technological solution for their specific circumstances, but also providing them with an affordable means to implement the technology.

The ability to introduce an appropriate financing solution for the project can often mean the difference between winning and losing a deal

An example of the provision of an integrated solution, encompassing renewable technology and financing is the Energy Efficiency Financing (EEF) scheme. As a joint initiative between the Carbon Trust and Siemens Financial Services Limited (SFS), the EEF scheme provides finance for energy-efficient and renewable energy equipment for businesses. The central idea of the scheme is that the expected savings in energy costs and/or income from energy generation should be used to offset the monthly equipment finance costs, thereby removing the need for initial capital outlay and introducing the concept of the equipment paying for itself over time.

Make or break: The ability to offer customers a finance package such as EEF, and remove any large capital outlay, will help secure more business for Recognised Suppliers of the scheme, advises Darren Riva, head of sales, Green Finance at Siemens Financial Services UK

Renewable energy equipment suppliers can apply to become a Recognised Supplier of the scheme, which will allow them to integrate the financing offer into their overall customer value proposition. As financing arrangements can be flexed to suit the customer's cash flow needs and business requirements, equipment suppliers can focus their efforts on providing the most optimal technological solution without customers' capital budget constraints.

The EEF integrated solution concept, combining technology and finance, makes suppliers' proposals and quotes more compelling to their customers and helps them win more deals and close those deals faster. An independent energy savings/earnings assessment is conducted by the energy specialists at the Carbon Trust for each project, giving businesses the reassurance that the expected carbon reduction/FIT or RHI earnings, and hence financial savings over time, will match or exceed the finance payments.

As there is an increasing recognition of both the financial and environmental merits of using renewable energy, more and more organisations are looking to implement renewable technologies to save costs and to cut their carbon footprint. If renewable energy technology suppliers want to make the most of this burgeoning trend, it is essential that they provide customers with a complete turn-key solution. Apart from being a valuable supplement to their core technical expertise, the ability to introduce an appropriate financing solution for the project can often mean the difference between winning and losing a deal.

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Sustainable education

Warwickshire College Group has successfully tackled the challenge of achieving excellent environmental performance across several of its campuses, including a showpiece £12 million redevelopment project at its Royal Leamington Spa College

Phased delivery

Prior to the project, the main campus building at Royal Leamington Spa College was a pair of unremarkable teaching blocks, constructed in the 1950s.

The recent refurbishment has successfully reduced the blocks' electrical load by 30 percent and halved the gas load to provide the college with a BREEAM 'Very Good' sustainable building that maximises both energy efficiency and comfort levels.

Building services engineers, Greenways conducted an in-depth dilapidation survey of the existing M&E services to ascertain what could be recycled, saving the client £150,000 thanks to reutilisation of M&E plant and equipment.

An enabling project involving a new mains distribution board, a new heating system and new distribution network was carried out, allowing floor by floor strip out, installation and connection so that the building could remain operational throughout the main programme.

Learning curve: Royal Leamington Spa College's £12m redevelopment boasts a plethora of energy saving technologies including LED lighting, insulated cladding and ASHPs

Heating and cooling

Main contractor, Speller Metcalfe, installed new double glazing and a 4" insulated cladding system which updated the teaching blocks' appearance and dramatically improved its thermal performance. The company also constructed a new atrium at the entrance to the building.

Greenways designed a natural ventilation system for the new atrium with automated window opening and louvered vents linked to temperature, CO2 and rain sensors.

Nik Chambers from Greenways said: "The natural ventilation system reduces the need for heating and cooling by providing a real-time, automated response to climactic conditions and CO2 levels, enhancing both safety and comfort.

"In the summer months, the system will automatically open vents and windows during the night to cool the building ready for the students the next day."

Amongst other significant changes to the mechanical services was the introduction of air source heat pumps to provide the energy for the domestic hot water (DHW) supply throughout the two teaching blocks. A gas-fired water heater has been installed as a back-up but the air source heat pumps have been specified to provide 100 per cent of the heat required.

Electrical efficiency

The 30 per cent reduction in the building's electrical load, despite the increase in square footage, is largely due to the use of LED lighting and lighting controls. LEDs have been used for exterior feature lighting, classroom lighting and emergency lighting with PIR sensors for automated switching.

The emergency lighting has been designed on a self-test, self-reporting system networked to a central building management system (BMS) to generate automated alerts of any faults to the maintenance team.

To add to the design challenges for Greenways, the architect, Robothams, opted to create a contemporary 'industrial' look for the building's interior, with repainting of the existing concrete soffits and exposed services in the classroom areas. This meant that all the services needed to be designed neatly as a functional feature.

Andrew Bruton, project manager, Speller Metcalfe added: "The aim of the project was to transform the existing property assets into an exemplar teaching space for a 21st century college environment, combining energy efficiency and low operational costs with modern aesthetics and inspirational learning spaces.

"With this scheme, we believe that we have truly achieved those goals, working together with Greenways to deliver a landmark scheme in the field of college redevelopment."

Two become one

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When **Warwickshire County Council** was looking to merge two local schools into a single building, it turned to the 'Sunesis' formula to provide certainty over build cost

Created as a joint venture between Scape and Willmott Dixon, Sunesis offers a fixed cost approach to public sector building, and includes a heat pump system from Mitsubishi Electric to secure the school's monthly energy costs.

The new £3.9m Arley Primary School will take in a maximum of 315 children and has been built using the Keynes model from the Sunesis Education range of standardised designs, comprising 11 classrooms, a hall, kitchen, staffroom, offices and outdoor play area.

The inclusion of three Ecodan CAHV monobloc ASHPs will provide all the heating and hot water that the school requires.

Tim Carey, product director for Willmott Dixon, said: "All local authorities are under pressure to save money, so this system is helping to reduce the cost of building schools.

"The inclusion of Ecodan means that the school only needs about half the plant room required for a traditional gas or oil fired system, which not only saves on the building costs but also frees up valuable additional space for education provision."

Under the Sunesis formula, local authorities are able to choose the building they want from a range of five individual school designs.

Mark Robinson, group chief executive at Scape, added: "The beauty of this approach is that the Local Authority knows exactly what it is getting. In an era of increasing accountability, Sunesis provides councils with viable options which allow them to improve their learning spaces and deliver value for money, without compromising on standards."

Forward thinking: Arley Primary School, Warwickshire, has been built for a fixed construction cost, and uses Ecodan heat pump technology to provide certainty on future running costs too

Commercial

Diplomacy reaches new heights

The **Italian Embassy in London** now benefits from reduced energy costs thanks to a 7.5kW PV system designed and supplied by Libra Energy

Flying colours: Libra Energy UK successfully met stringent client criteria to exclusively use EU-made components for the Italian Embassy's 7.5kW PV system in London

The installation was arranged under Libra Energy's 'Preferred Installer' programme which saw the work awarded to Signature Solar in Essex. Companies under the scheme undergo rigorous checks in return for share of projects Libra Energy is involved in.

Italian energy company Gala .Spa first contacted Libra Energy in 2014 and requested them to undertake a feasibility study for the installation. The site presented many challenges including the sensitive nature of work conducted inside the building, and constraints on available roof space.

The client also had some specific requirements for the project such as only the use of EU equipment, and Italian solar panels. Solsonica panels were therefore chosen whilst Van Der Valk Dutch A frames were used to mount the system. String inverters were deemed unsuitable due to shading issues so SolarEdge optimisers were connected to a 3Ph SolarEdge SE7000 inverter. EU-made ancillary products completed the system's components.

"This was a prestigious project for us to win," said Paul Bradbury, Libra Energy UK general manager.

"It was rewarding that Gala .Spa came to us first to source a solution for the Embassy and we were delighted to offer a workable design solution that has proved to be effective for this particular job.

"We were happy to work with Simon and the team at Signature Solar who have done an excellent job on the roof above Central London."

Knowledge: Case studies

BIOMASS

What: Somerset golf club dumps oil for biomass

How: Windhager 120kW BioWIN Excel Kascade system

Result: Potential annual RHI income and energy savings of £22k

Windhager has provided Taunton & Pickeridge Golf Club with a twin biomass boiler to reduce its energy costs.

The main objective of the club's members was to reduce the running costs of their oil boiler, which was consuming up to 15,000 litres of oil per year.

Based on current energy consumption, the club will net £12,200 per year under the RHI, which means the loan needed to pay for the installation will be paid back within five years. Thereafter the biomass system will generate a surplus of £22,600 per year from RHI income and energy bill savings.

South West-based installer Orin Green installed a 120kW BioWIN Excel Kascade system with a 1500 litre AccuWIN accumulator tank. The boilers were installed in a purpose-built cedar-clad plant room which also houses an integral wood pellet store.

Mark Readman, executive manager at Taunton & Pickeridge Golf Club, said: "With the future of the club in mind, the low running costs of a biomass boiler system as well as the RHI payments encouraged our decision to convert to biomass.

"We found the whole process very smooth and seamless. The installation didn't cause any disruption to the daily running of the club. We look forward to the benefits the boilers will bring to the club over future years."

Clubbing together: Members of Taunton & Pickeridge Golf Club in Somerset voted to convert its increasingly expensive oil-fired system for a Windhager biomass system

SOLAR PV

What: IoW medical centre makes bill savings

How: 7.4kW system with Enphase inverters

Result: 11 percent ROI

Ventnor Medical Centre now boasts the latest solar installation on the Isle of Wight from Dorset-based NGPS.

Located in the Victorian seaside resort of Ventnor, the medical centre has provided services for more than 5000 patients since 1990. The Centre is modern, but was struggling to meet the rising cost of energy bills.

Its new 28 panel PV array incorporates an Enphase inverter on each panel for monitoring, and is mounted on pods to ensure the optimum angle for energy capture.

The 7.4kW system is already on track to save £900 per annum and attract £1,000 income a year from the Feed-in Tariff.

NGPS technical director, Nick Good, said: "We have carried out many installations on the Island. The Centre made the decision to support this investment based on the fact that all savings achieved can go directly back to patient care.

"This makes it the soundest investment the Centre can make at this moment in time – representing a return on their investment of more than 11 percent per annum."

First aid: Ventnor Medical Centre can invest total savings of almost £2,000 per annum from its 7.4kW PV system into improving patient care

SOLAR PV

What: Shropshire farm swaps dairy for solar PV

How: 500kW ground mounted system

Result: 11.65 percent ROI and 8.6 year payback

A Shropshire farmer who sold his dairy herd in 2012 due to falling milk prices has secured an attractive alternative income from solar PV.

Having visited an energy show in 2013, Martin Davies learned more about the Feed-in Tariff and the benefits of solar.

An open day at Bowler Energy's Derbyshire head office followed, which secured Martin and his family's decision to opt for solar.

The installation commenced in April 2014 of a 2,000 panel system in one of the family's fields, which cost £520,000. The family's sheep were able to graze under the panels once construction was complete, so no pasture land was lost.

The panels are currently performing 8.85 percent better than forecast and are expected to generate 464,500kWh per year, yielding an annual income of £60,617 – an ROI of 11.65 percent and 8.6 year payback.

"We had a lot of help from Bowler Energy in getting everything sorted out, and the ongoing support has been very good," said Martin.

"In fact, we are looking at extending the system by adding 200kW of additional panels."

The Davies family have chosen to export all the energy produced, but a site with a high energy requirement could use much of the energy produced, which would give an ever greater ROI and shorter payback.

Fields of gold: Having ended dairy farming amid falling milk prices, the Davies family repurposed some of their agricultural land and found an alternative source of income via a large 500kW PV array

BIOMASS

What: Countryside champion opts for green heating

How: 20kW ÖkoFEN wood pellet boiler

Result: Five year payback

Mark Scandle, northern territory manager for the Country Landowners Association, has chosen a biomass solution to replace a 30-year-old oil system at his rural property near Hexham.

Motivated by working and living in a rural community with sustainability at its heart, Mark accepted the recommendations of local installer EcoEnerg to purchase an ÖkoFEN wood pellet boiler, supplied by Organic Energy.

Eligible for domestic RHI payments, the boiler will have paid for itself in less than five years and will achieve fuel savings of £30 per annum.

Mark said: "My existing heating system was not only old but increasingly inefficient so it made sense to use its replacement as a chance to consider greener options.

"I have no doubt that making the move to a more sustainable form of heating was the right thing to do.

"The team at EcoEnerg provided solid advice and carried out the installation in a professional and efficient manner and the boiler itself is working very well. I'd have no hesitation in recommending this system to others in similar situations."

Craig Sams of EcoEnerg added: "We have now installed 11 ÖkoFENs and are delighted that Mark is so positive of his experience.

"The work was carried out under permitted planning and thankfully didn't pose any significant issues during installation. As we were able to integrate the new boiler with Mark's existing heating cylinder and radiators the overall disruption was kept to a minimum."

Natural choice: Inspired by working in a rural setting, Mark Scandle of the Country Landowners Association switched away from an inefficient oil heating system to a sustainable alternative

Figure it out

Generation tariffs for non PV technologies

Technology	Band (kW)	Tariffs (p/kWh)
Hydro	≤15	17.17
	>15-≤100	16.03
	>100-≤500	12.67
	>500-≤2000	9.90
	>2000-≤5000	2.70
Wind	≤1.5	14.45
	>1.5-≤15	14.45
	>15-≤100	14.45
	>100-≤500	12.05
	>500-≤1500	6.54
	>1500-≤5000	2.77

(Source: OFGEM)

Number of MCS registered installers per technology

Technology type	Cumulative number	Registered Apr 15
Solar PV	2535	39
Biomass	409	13
Air source heat pump	844	19
Ground source heat pump	681	12
Solar thermal	912	12
Small Wind	86	0
Total	2893	106

Number of MCS registered installations per technology

Technology type	Cumulative number	Installed Apr 15
Solar PV	693231	11218
Biomass	12739	119
Air source heat pump	36930	666
Ground source heat pump	10137	217
Solar thermal	7679	87
Small Wind	4880	0
Total	765596	12307

(Figures supplied by Gemserv)

Generation tariffs for Solar PV

Tariff band	FiT rate (p/kWh)
<4kW	13.39
>4-10kW	12.13
>10-50kW	11.71
>50-150kW	9.98
>150-250kW	9.54
>250kW-500kW	6.16
Standalone	6.16
Export Tariff	4.85

Domestic RHI tariffs

Technology	RHI rate (p/kWh)
ASHP	7.42
Biomass boilers	8.93
GSHP	19.1
Solar thermal	19.51

Tariffs apply to applications submitted after 01/04/15

Green Deal

Month	Assessments	Live GD Plans
Mar 15	27450	845
Total	529354	6809

Green Deal supply chain

Month	Assessor organisations	Providers	Installers
Mar 15	01	07	-85
Total	394	184	2258

(Source: DECC)

Cost comparison of heating fuels (not including RHI payments)

Fuel source	kWh provided per unit of fuel	Efficiency of system (%)	Units consumed by house (kWh)	Price per unit of fuel (£)	Units consumed per annum	Cost per annum
Heating oil (kerosene)	10 per litre	90	25300	0.4 per litre	2530 litres	£1,012
Wood pellets	4800 per tonne	94	24300	257 per tonne	5 tonnes	£1,285
Natural gas	1 per kWh	90	25300	0.041 per kWh	25300 kWh	£1,037
LPG	6.6 per litre	90	25300	0.38 per litre	3833 litres	£1,457
Electricity	1 per kWh	100	23000	0.14 per kWh	23000 kWh	£3,220
*Air source heat pump	1 per kWh	290	7931	0.14 per kWh	7931kWh	£1,110
*Ground source heat pump	1 per kWh	360	6389	0.14 per kWh	6389kWh	£894
Dual mode system 1						
Oil boiler (30% of heat load)	10 per litre	90	7590	0.4 per litre	759 litres	£303
*Air source heat pump (70% of heat load)	1 per kWh	290	5552	0.14 per kWh	5552 kWh	£777
Dual mode system 2						
Gas boiler (30% of heat load)	1 per kWh	90	7590	0.041 per kWh	7590 kWh	£311
*Air source heat pump (70% of heat load)	1 per kWh	290	5552	0.14 per kWh	5552 kWh	£777

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 and other sources.

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: 5.87 Tier 2: 1.56	20
Medium biomass	Solid biomass: Municipal solid waste (inc CHP)	200 kWth and above, less than 100 kWth	Tier 1: 5.18 Tier 2: 2.24	20
Large biomass	Solid biomass: Municipal solid waste (inc CHP)	1000 kWth and above	2.03	20
Small ground source	Ground source heat pumps, water-source heat pumps, deep geothermal	Less than 100 kWth	Tier 1: 8.84 Tier 2: 2.64	20
Large ground source	Ground source heat pumps, water-source heat pumps, deep geothermal	100 kWth and above	Tier 1: 8.84 Tier 2: 2.64	20
Solar thermal	Solar thermal	Less than 200 kWth	10.16	20
A2W heat pumps	ASHPs	All	2.54	20

(Source: OFGEM)

Domestic RHI deployment

Technology	Accreditations (since Apr 14 - Mar 15)	% of total
ASHP	12766	42
GSHP	4283	14
Biomass	7861	26
Solar thermal	5785	18
TOTAL	30,695	100

(Source: DECC)

Who: Phil Hurley, managing director, NIBE

What: NIBE is a leading European manufacturer in the renewable heating sector

Personal touch: A crucial part of my job is meeting our VIP Installers face-to-face for honest and constructive feedback, says Phil Hurley, NIBE's managing director

Putting the installer first

Monday

A typical week starts at 6am on Monday morning, when I take my Rottweiler Tia out for a walk. After that, it's straight to the office, where I go through emails and prepare for a busy week ahead. I also use Monday mornings to catch up with the different NIBE departmental managers, who update me on the latest from the sales, service, marketing and finance teams.

The afternoon is taken up with internal planning meetings to run through arrangements for upcoming NIBE projects, developments or events. For example, we host a popular annual conference for our nationwide network of accredited VIP Installers, which takes a lot of organisation. The focus of this year's conference was 'engaging the consumer', and some high-profile speakers joined us, including Patrick Allcorn from DECC and Energy Saving Trust chairman Ted Brown.

Tuesday

Today, I'm meeting with one of our distributors to discuss stock levels and requirements, and find out when new deliveries are needed. NIBE's network of UK distributors spans the length and breadth of the country, and they all work hard to support our 100+ VIP Installers. It's important that we liaise with our distributors regularly – not only to build and maintain strong working relationships, but also to ensure we're providing them with all the products and support they need to meet demand.

Wednesday

It's an early start today as I'm catching a train from Chesterfield (home to NIBE's UK offices) to London, to attend an MCS Heat Pump Working Group along with other industry stakeholders. The main talking point on today's agenda is the upcoming ErP Directive – a set of European regulations on the labelling and design of energy-related products, due to come into force this September. The new legislation will affect the way installers do their jobs, as it will be their responsibility to calculate products' and systems' efficiency in accordance with the regulations. These calculations will be a mandatory part of MCS standards, so we're discussing how best the industry can incorporate the legislation into the current scheme in time for September – both for products and for installers.

Thursday

Thursday is another early start, and another day out of the office. I'm out with one of our sales engineers, accompanying him on a visit to one of his local VIP Installer contacts. I love meeting the VIPs face-to-face, and I see it as a crucial part of my job – they are a valuable source of honest, first-hand feedback on what NIBE is doing well and what we might be able to improve on. I'm always looking for ways to enhance our offering, in what is a constantly evolving industry. Listening to what our installers have to say is a top priority, and we're always passing their views on to the product development team in Sweden (where NIBE's European headquarters are based).

Friday

I'm back at my desk on Friday, bringing myself up to speed with emails and actions that have come out of the week. Today is our monthly management meeting, when the managers from all departments get together and we review the status of our sales and accounts. Air source heat pumps have been a particularly strong growth area, with sales of our new F2040 range soaring by 103 percent in 2014 alone. We go through the reports from each department with a fine toothcomb, using them to monitor service levels, identify any areas that need improvement, and implement strategies to make it happen.

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