

Issue 4 24 | September

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# Renewable

## ENERGY INSTALLER & SPECIFIER

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**RETROFIT: EMPOWERING WOMEN**  
HEAT PUMP PROGRESS  
**SOLAR ON NEW BUILDS**  
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### 44 The time to act is now

With £17m investment secured for British solar energy scale-up Naked Energy, Christophe Williams, CEO, talks on what this means for the decarbonisation of heat, the barriers to net zero, and the 'cold elephant in the room'.

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## A growing sector

### WELCOME to our September issue.

Thank you to everyone who has spent time sharing thoughts with us. Not just for this issue, but also in the constant stream of updates we enjoy sharing online and through our social media communities and newsletter.

Coming through them all, is a strong sense of a sector in which growth is accelerating. Not the exhilarating acceleration of a theme park coaster, such as Alton Tower's Rita. Propelled from 0-62mph in just 2.5 seconds, Rita delivers her biggest kick at the start, the remaining peaks and troughs of the track never quite delivering the same level of adrenalin.

Reminiscent, maybe, of the previous industry peak, still widely referred to as the solar coaster. By contrast, this latest growth, while dramatic at times, feels far more organic. Latest industry data, shared in these pages, shows consistent growth in both interest and installs, and training figures offer cause for hope that the skills shortage will be overcome.

With one of the biggest industry events – Solar & Storage Live – in just a couple of weeks, we are delighted to support as media partners. All the details you need are in this issue's special supplement which includes exclusive content from key event speakers.

**Visit the REI team on stand E158 and let's keep the conversation going!**

## REI: Supporting the sector since 2008

The origins of Renewable Energy Installer date back to autumn 1989 when Nick Smith, founder, spent a wet weekend volunteering at the Centre for Alternative Technology in Machynlleth to learn about the wonders of PVs, heat pumps and more. Our first issue, published in 2008, advocated for the adoption of a new concept called the Feed-in Tariff; we've been informing and inspiring those that drive the microgeneration market ever since, rapidly becoming the leading publication for all things renewable. Responding to popular demand, the magazine is back – in both print and digital format – to complement our extremely popular website, newsletters and social media channels.

With valuable insights for installers, specifiers, manufacturers, and suppliers, REI covers all relevant technologies and services – analysing latest sector developments and sharing insights from industry voices. Enthusiastically received by the industry, we will continue to support the sector with this valued industry publication as, together, we solve the challenges of heat and energy decarbonisation.



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# Growth in the heat pump sector

**L**ATEST data from the heat pump sector includes a major milestone in UK adoption. Significant growth in installer training, number of installations and grant scheme applications, indicates accelerating uptake and an increasing recognition of heat pumps as a key technology in the UK's transition to net zero. Has the tipping point finally been reached?

## Doubling up

BUS figures show that July 2024 was the best month for the Boiler Upgrade Scheme (BUS) this year, with 3,047 applications – more than double the figure for July 2023.

Commenting on the latest figures, Ian Rippin, CEO at MCS said: "The latest government figures show that July 2024 was the best month for the Boiler Upgrade Scheme (BUS) this year, with 3,047 applications – more than double the figure for July 2023. July also marked the second-highest month for applications since the BUS launched, just behind the peak in October 2023, which was the first month that followed the £7,500 grant uplift.

"The BUS requires installations to be MCS

certified to qualify for the £7,500 grant, giving consumers peace of mind in the quality, safety and performance of their heat pump, whilst making low-carbon heating more affordable and accessible."

The Boiler Upgrade Scheme (BUS) remains vital to uptake. Government figures for the first half of this year showed that Boiler Upgrade Scheme applications were up 73% from January – June 2024 compared to the same period in 2023, with a total of 14,554 BUS applications submitted in the first six months of 2024.

This reflects the growing number of consumers across England and Wales who are taking advantage of the incentive, which provides £7,500 towards the installation of a heat pump and requires it to be MCS certified.

For those in Scotland, the Home Energy Scotland (HES) Grant and Loan offers a similar incentive, with grants up to £7,500 for heat pump installations, and up to £9,000 for households that qualify for a rural uplift.

## A major milestone in installations

Another key measure of sector growth is the number of certified installs and, according to the

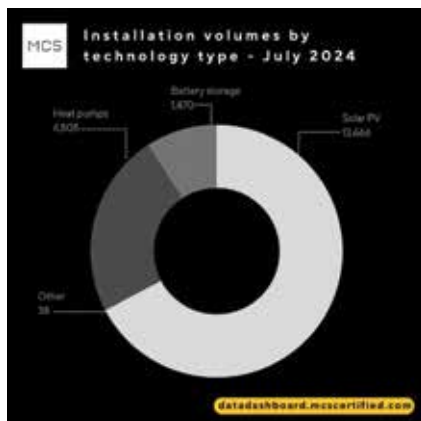
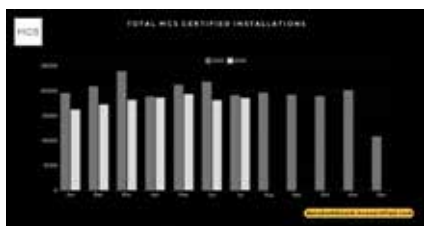
latest data from MCS, the UK has now reached 250,000 all-time certified heat pump installations.

It is a major milestone in the UK's adoption of small-scale renewables, and indicates that uptake is gathering pace. From January to July 2024, more than 30,000 certified heat pumps were installed in homes and small businesses across the UK, which is a 45% increase compared to the same period in 2023 and puts 2024 on track to be a record-breaking year for the technology.

Ian commented: "It's great to see the growing number of consumers across UK who are switching to heat pumps to heat their homes.

"Clearly, there is still some way to go in order to achieve the target of 600,000 annual heat pump installations by 2028, but with the BUS running until March of the same year, consumer demand looks set to continue rising," he said.

"Data from the MCS Data Dashboard shows that heat pumps continue to be installed in record numbers. The UK reaching 250,000 certified heat pump installations is a significant milestone in the nation's shift to low-carbon heating. July was also the fifth consecutive month with over 4,500 certified heat pump installations, maintaining progress towards 2024 being a record year for the technology."



**Heat pump training qualification numbers also show sustained growth.**

In another boost to sector prospects, the Heat Pump Association's (HPA) newly published Q2 2024 heat pump qualification data demonstrates increasing levels of interest in heat pump training in the UK.

Just over 2,400 individuals successfully completed a heat pump training qualification in Q2 2024, marking a 14% increase in the number of individuals trained when comparing the first half of 2024 to the same period in 2023, and pushing the total to 4,875 for the year so far.

Even more striking is the 37% rise in qualifications from Q2 2023 to Q2 2024.

Laura Thomas, Chair of the HPA Training Working Group, expressed her enthusiasm for this positive trend:

'The steady growth in people successfully completing heat pump training courses reflects the increasing recognition and value given to heat pumps as a key technology in the UK's transition to net zero. The rise in qualified individuals year on year solidifies the efforts of training providers to meet the demand of upskilling the workforce to support the growing market.'

**Supporting the development of a skilled workforce**

Previous analysis by the HPA showed that a record high of almost 40,000 heat pumps were installed in the UK in 2023, but remains some way off the previous government's targets of 600,000 being installed every year.

Earlier this year, the HPA considered a range of options for tackling what it sees as the key challenges in accelerating heat pump deployment for domestic heating and the industry body remains committed to supporting the sector as growth accelerates:

'The HPA and its members remain dedicated to supporting the development of a skilled workforce capable of accelerating the installation of heat pumps in the UK.

'With the demand for training continuing to rise, the HPA will continue to collaborate closely with training providers, stakeholders, and policymakers to ensure policy, support and training standards remain up to date and effective.

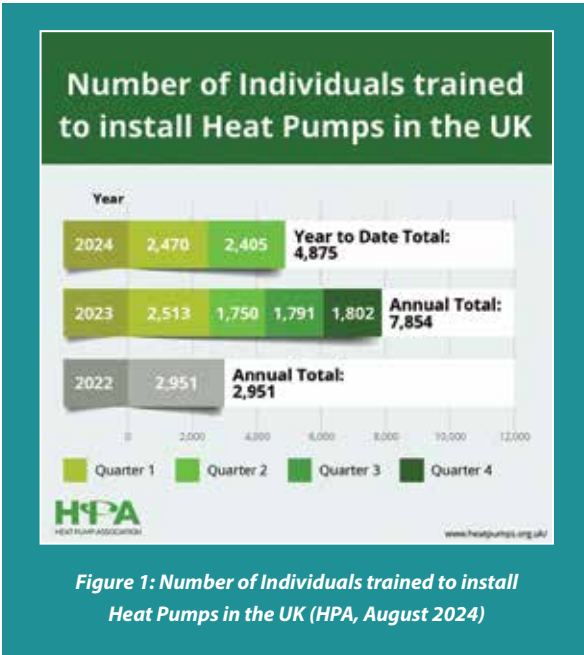


Figure 1: Number of Individuals trained to install Heat Pumps in the UK (HPA, August 2024)

**As an installer in the sector, are you experiencing the same growth in both interest and installs? Get in touch to share your own take on the trajectory for heat pumps and what you see as the remaining barriers to uptake:**

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# Billions pledged to renewables sector – are the Government's plans on the right track?

**WHEN the last edition of Renewable Energy Installer magazine went to press, a new government had just come into power, full of pledges and the promise of 'making Britain a clean energy superpower by 2030'.**

At that time, we'd seen the manifesto headlines and we reported on your reactions. Since then, the announcements have been coming thick and fast, so below we include an update of what happened in Labour's first month.

On the face of it, the news makes for positive reading, with billions of pounds being put on the table, alongside various new groups and committees tasked with removing barriers and accelerating the energy transition.

But what do you think? Will the plans translate into real change on the ground? Are the right barriers being targeted in the right way?

Please write to us at [news@renewableenergyinstaller.co.uk](mailto:news@renewableenergyinstaller.co.uk) with your views.

## Ed Miliband's priorities

The scene was set for what's to come with the new Secretary of State for Energy Security and Net Zero, Ed Miliband, outlining his priorities for the department as follows:

- Delivering the mission to boost energy independence and cutting bills through clean power by 2030
- Taking back control of our energy with Great British Energy
- Upgrading Britain's homes and cutting fuel poverty through the Warm Homes Plan
- Standing up for consumers by reforming the energy system
- Creating good jobs in Britain's industrial heartlands, including a just transition for the industries based in the North Sea
- Leading on international climate action, based on our domestic achievements

Mr Miliband was previously the Secretary of

State for Energy and Climate Change between 2008 and 2010.

## New National Wealth Fund

Work has begun to align the UK Infrastructure Bank and the British Business Bank under a new National Wealth Fund (NWF) that will invest in industries of the future.

A new taskforce met early in July to kickstart the work, chaired by the Green Finance Institute, alongside former Bank of England Governor Mark Carney, Barclays CEO C.S Venkatakrishnan, Aviva CEO Dame Amanda Blanc and large institutional investors.

A total of £7.3bn of additional funding will be allocated through the UK Infrastructure Bank so investments can start being made immediately, focusing on further priority sectors and catalysing private investment. This funding is in addition to existing UKIB funding.

Reforms will be made to the British Business Bank to unlock billions of pounds of investment in the UK's world-leading green industries.

The NWF is expected to make 'transformative investments' across every part of the country, supporting thousands of jobs, working with local partners including regional mayors.

New legislation will be brought forward to cement the fund in statute and make it a permanent institution.

## Mission Control for Clean Power

A new 'control centre' has been established, tasked with delivering the mission of clean power by 2030. Former chief executive of the Climate Change Committee, Chris Stark, has been appointed to lead the new Mission Control.

This will be a one-stop shop, bringing together a team of industry experts to focus on accelerating the transition away from volatile fossil fuel markets to clean, homegrown power, to boost Britain's energy independence and cut bills.

It will work with key energy companies and

organisations including the regulator Ofgem, the National Grid and the Electricity System Operator to remove obstacles and identify and resolve issues as they arise. It also aims to speed up the connection of new power infrastructure to the grid.

## Great British Energy launched

The Great British Energy Bill has been introduced to create a new publicly-owned company – Great British Energy – to be backed by £8.3m of new investment during the course of this Parliament.

The Government says billions of pounds worth of investment in clean power will be unlocked through a new partnership between Great British Energy and The Crown Estate.

The 'unprecedented' partnership has the potential to leverage up to £60bn of private investment into the UK's drive for energy independence.

Former CEO of Siemens UK, Juergen Maier, will chair the new company.

The Crown Estate has a £16bn portfolio of land and seabed, operates independently, returning its profits to the Government.

The Crown Estate estimates the partnership will lead to up to 20-30GW of new offshore wind developments reaching seabed lease stage by 2030, enough power for the equivalent of almost 20 million homes.

The partnership will boost Britain's energy independence by investing in homegrown power, and with accompanying reforms to policy, cut the time it takes to get offshore wind projects operating and delivering power to homes by up to half.

This partnership will see the public sector taking on a new role for offshore wind projects. This will ensure that future offshore wind development has lower risk for developers, enabling projects to build out faster after leasing and crowding in private sector investment. It will also help boost new technologies such as

carbon capture and storage, hydrogen, wave and tidal energy.

### Great British Energy will have five key functions:

- Project development – leading projects through development stages to speed up their delivery, whilst capturing more value for the British public
- Project investment – investing in energy projects alongside the private sector, helping get them off the ground
- Local Power Plan – supporting local energy generation projects through working with local authorities, combined authorities and communities
- Supply chains – building supply chains across the UK, boosting energy independence and creating jobs
- Great British Nuclear – exploring how Great British Energy and Great British Nuclear will work together, including considering how Great British Nuclear functions will fit with Great British Energy.

## Record £1.5bn funding for clean energy

A record CfD budget has been announced to deliver homegrown clean energy projects.

Ed Miliband announced the budget for this year's renewable energy auction is being increased by £500 million to over £1.5 billion – a record budget – helping build new green infrastructure as part of the mission to deliver clean power by 2030.

Funding will accelerate the delivery of clean, cheap, low-carbon electricity to families and businesses, generated by renewable energy technologies such as wind turbines and solar panels.

It includes £1.1 billion for offshore wind – which has more budget available than all of the previous auctions combined.

Industry will now bid for a share of the funding through the government's sixth renewable auction – known as the Contracts for Difference scheme – which provides developers with initial subsidies for clean electricity projects across Britain with a built-in design to keep costs low for billpayers.

These subsidies are paid back when wholesale electricity prices are higher than the agreed Contract for Difference price.

The scheme's design means the central government's budget will not be impacted, following findings from a Treasury spending audit revealed £22 billion of unfunded pledges inherited from the previous government.

### The Allocation Round 6 (AR6) budget includes:

- £1.1 billion for offshore wind, an uplift of £300 million

- £185 million for established technologies such as onshore wind and solar, an uplift of £65 million
- £270 million for emerging technologies such as floating offshore wind and tidal, an uplift of £165 million

## New 'Mission Board' meets

Ed Miliband chaired the first meeting of a new Mission Board – a forum bringing together ministers from across government to focus on delivering the 'clean energy superpower' mission.

## New Onshore Wind Taskforce

One of the first actions of the new Labour Government was to remove two planning policy tests which previously made it all but impossible to bring forward onshore wind farms.

The removal of the tests, which only applied to onshore wind farms, means these applications will now be treated the same way as other energy development proposals.

No large-scale wind farms have been built in England for many years, but Labour has pledged to double onshore wind capacity to 35GW by 2030.

To this end, a new Onshore Wind Taskforce has been set up, chaired by Ed Miliband and EDF Renewables CEO, Matthieu Hue. The taskforce will 'drive action across industry and Government to unblock barriers to rapidly increase onshore wind capacity'.

## Solar Taskforce resumes

Labour aims to triple solar power to 50 GW by 2030 and unblock solar projects. Ed Miliband quickly gave consent to three nationally significant solar farms which were held up by the previous government.

It has also reactivated the Solar Taskforce, which was started under the previous government and chaired by Solar Energy UK's CE Chris Hewett. It will now be co-chaired by Ed Miliband.

Publication of the taskforce's Solar Roadmap had been imminently expected before the election was announced. It will now need to be revised in line with Labour's new ambitions.

## Implementing a National Energy System Operator (NESO)

Labour plans to continue the policy and organisational design of the new National Energy System Operator.

It is working with Ofgem, the National Grid, the Electricity System Operator and the National Gas Transmission to implement NESO and ensure a smooth transition.

This new independent organisation will adopt a 'whole system approach' to strengthening energy security, helping to deliver net zero and ensuring household bills are affordable in the long-term.

## The key energy pledges

### Clean power by 2030

- Double onshore wind, triple solar power and quadruple offshore wind by 2030
- Invest in carbon capture and storage, hydrogen and marine energy
- The lifetime of existing nuclear plants will be extended
- A strategic reserve of gas power stations will be maintained – existing licences will not be revoked, but new ones won't be issued

### Great British Energy

- Create a new publicly-owned company called Great British Energy
- It will be given £8.3bn to create jobs and build supply chains across the UK, including to facilitate local energy production

### Energy system reform

- Work with industry to upgrade national transmission infrastructure and rewire Britain
- Ensure a tougher system of regulation that puts customers first

### Warm Homes Plan

- Invest an extra £6.6bn over the next parliament to upgrade five million homes to cut bills
- Offer grants and low interest loans to support investment in insulation and improvements such as solar panels, batteries and low carbon heating
- Work with private sector to provide further private finance to accelerate home upgrades
- Ensure homes in private rented meet minimum energy efficiency standards by 2030
- Cut energy bills for good, taking up to £1,400 off the annual household bill and £53 billion off for businesses

### High-quality jobs

- Invest in industries of the future through the National Wealth Fund to create 650,000 new jobs by 2030
- Reward clean energy developers with a British Jobs Bonus, allocating up to £500m per year from 2026

### Accelerating to net zero

- Support the introduction of a carbon border adjustment mechanism
- Make the UK the 'green finance capital of the world', mandating UK-regulated financial institutions to implement credible transition plans that align with the 1.5°C goal of the Paris agreement.

# Could GB Energy expose the UK's grid insecurity?

Not so much 'big dumb kettle' as 'smart battery'



**T**HE UK energy system is unable to handle the current rate of renewable energy generation and this is costing consumers. With GB Energy expected to connect more renewable energy generators to the grid, this issue could be exacerbated.

Pete Armstrong, CEO and Co-founder of Oxford University spin out Mixergy, considers the implications of GB Energy, the need for a range of storage solutions to both alleviate grid pressure

and enable greater use of renewable generated energy, and how industry partnerships can accelerate the roll out of solutions to consumers to make the UK's energy system more resilient.

Following their election win, Labour has begun to mobilise behind their vision to 'Make Britain a Clean Energy Superpower'. This sets out core objectives around quadrupling offshore wind, tripling the installed capacity of solar PV and pushing ahead with new nuclear deployment. Recent research has demonstrated that by supplementing variable renewable energy sources with some baseload nuclear energy power, we can drastically reduce the amount of long term hydrogen storage required to keep our energy system running; another plank of Labour's strategy. Make no mistake, this is a mammoth challenge but the rewards are considerable. From delivering greater energy security to reducing electricity bills as we become decoupled from

international gas prices. There is however a challenge.

Our power grid can't handle the amount of power being generated today, let alone by 2030. Our ageing infrastructure is outdated, and the costs to improve it so it can handle the increasing loads needed for us to move away from gas are astronomical. Labour themselves point this out by pointing to the stark reality that we will need to build four times the amount of grid infrastructure in the next seven years compared to everything deployed in the last three decades!

Another consequence of mass deployment of renewables is that when more energy is being generated than the grid can handle, the National Grid pays what are known as curtailment payments to switch the wind farms off. These curtailment payments to the generators are being passed to consumers through their energy bills. From January to October 2023 alone, Carbon



Tracker estimated that National Grid paid £590m to switch wind farms off, costing householders an average of £40 a year. This figure is expected to rise to at least £150 by 2030 as more renewable capacity takes hold.

### So – what’s the answer?

Flexible grid-connected technologies such as home batteries and EV chargers are an ideal solution. These systems help to balance the grid through control strategies which avoid using energy during peak times whilst storing energy when it’s abundant. They have the potential to save consumers money, whilst reducing the amount of new infrastructure, cables and energy storage systems that might otherwise need to be installed. A new report from LCP Delta, commissioned by the Hot Water Association, has calculated that hot water cylinders and associated storage devices could shift 23GWh of energy demand to off-peak electricity times.

This is the objective behind Mixergy smart hot water cylinders. Conventional hot water cylinders heat all or nothing, irrespective of how much energy is needed and, at the same time, there is no accurate knowledge of their state of charge. Mixergy cylinders, on the other hand, accurately measure their energy content at all times whilst only heating what the household requires. Combined with Mixergy’s software, this makes the

cylinder less like a ‘big dumb kettle’ and more like a smart battery which works with National Grid by storing excess energy when renewable power is plentiful whilst reducing bills in the process. By only heating what the household needs, there’s more room in the cylinder for wind and solar farms to come online at any time throughout the day. In fact, we recently announced an industry-first energy offer with British Gas to mobilise the millions of homeowners with hot water cylinders to help the grid whilst saving on their energy bills. Households that have a Mixergy smart hot water cylinder will be rewarded with £40 a year when they sign up for a British Gas energy tariff. This is the first time a utility has offered to reward homes for choosing a grid-connected hot water cylinder that can store surplus energy generated by renewables, rather than paying wind farms to switch off. Mixergy eXtra will be available from the autumn to Mixergy smart hot water cylinder owners. The system works with all cylinder types, whether operating with a gas boiler, heat pump, solar PV or direct electric. In every case, surplus grid energy can be used to reduce bills. The system works across a wide range of alternative tariffs on the market (from Economy 7/10 all the way through to Octopus Agile), always with the objective of delivering the best interaction between the home and grid to save energy and reduce costs without compromising comfort.

We originally conceived the idea of a smart hot water cylinder back in 2014. The amount of surplus energy has grown vastly since then and the grid will need flexible demand to accommodate the huge surpluses of renewable generation that are being planned. As electrification starts to replace gas boilers, hot water storage is going to be crucial to delivering affordable hot water for showers and baths because heat pumps and/or direct electric heating can’t provide instant hot water like combi gas boilers can.

The scale of the opportunity is massive. An estimated 10 times the capacity of our entire pumped hydro fleet is distributed across our cylinders across the UK. If all these cylinders could work with the grid, a huge amount of renewable energy could be used, removing the need for curtailment payments and saving billions of pounds per annum by the mid-2030s.

Mixergy is the first smart and grid-connected hot water cylinder that does this efficiently and conveniently. Its patented and unique approach offers unprecedented hot water control with any heat source (heat pumps, solar PV, etc.). It can provide all the hot water the home needs, even when its cylinder is not heating during peak times. This makes it an attractive product for the home, as it saves money and hot water energy consumption, while being simple to use.



# Fusionsolar



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# Clearer vision, quality installations: MCS' lead role in raising industry standards

**E**NSURING the quality of renewable installations is key to increasing consumer confidence in home-grown technologies and decarbonising UK homes.

**To achieve this, the redeveloped MCS will be taking a more active role in monitoring compliance, assessing installations, and ultimately driving up standards across the industry. Ian Rippin, CEO at MCS, explains.**

To meet the growing and changing demands of the small-scale renewables sector, and following an extensive consultation with industry, MCS is changing. Set to launch in January 2025, it is a significant change that will impact installers and consumers alike.

At its core, the redevelopment is designed to raise standards, to ensure that consumers can be confident when investing in renewable technologies such as heat pumps and solar panels. To achieve this, it is crucial that MCS has better oversight of the installations that are being delivered under its Scheme, and where necessary, has the power to act should they be deemed to not meet standards or to have caused consumer detriment. This is in everyone's interest, because it will allow good installers to stand out and prevent poor installers from taking advantage.

## Boots on the ground

First and foremost, we are expanding our technical assessment team, and we aren't waiting for the new Scheme to implement this. It is already underway, with the team having doubled in size over the last 12 months. More assessors out on the road means more installations being checked for compliance, as well as more signposting and support for MCS installers, and this has to be seen as a positive for the industry.

The assessments that our technical assessors carry out is in addition to the assessments being undertaken by Certification Bodies. Here, MCS will be providing Certification Bodies with prescribed Assessment Criteria, which will improve consistency across assessments and make it even clearer how to ensure compliance. Certification Bodies will also be working to a new Quality Risk Model to determine their frequency of assessments. We'll reward good contractors with fewer assessments, and identify poor workmanship by carrying out more assessments on installers that present an increased risk.

## A direct line to consumers

We have already announced that MCS will become a single point of contact for consumers



who wish to escalate their complaints. This level of clarity is important, as we know the current system can often leave consumers feeling confused and without recourse.

Crucially, our contact with customers is also going to be proactive. We won't just wait for consumers to reach out to us, we will be getting in touch with each and every person who has an MCS certified installation. We'll be asking them about their experience, their installer, and how they are getting on with their new technology.

This is important – not least because it means we aren't just hearing about where things have gone wrong. It will give us better oversight of all the installations that are being delivered under the MCS name, providing greater confidence in what it means to be certified and an overview of the quality of new installations across the UK.

## A direct relationship

These measures are designed to provide MCS with a clearer picture, but we also want to make sure we are working with installers to continue driving up standards. They are the lifeblood of our industry and have perhaps the most important role to play in the journey to net zero.

The redeveloped Scheme will therefore establish a new, direct relationship between MCS

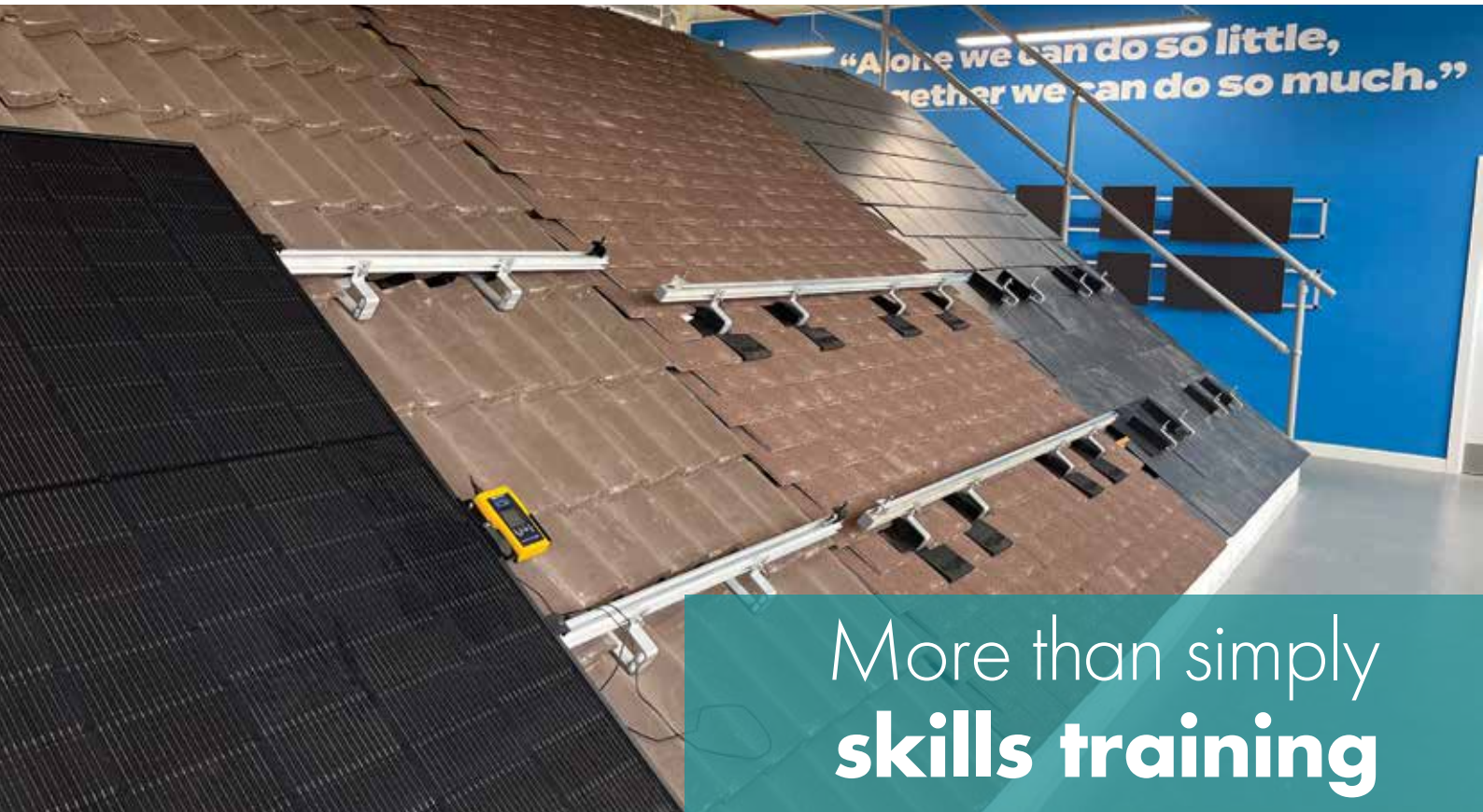
and installers, thanks to an Installer Agreement that will be in place. On the one hand, this enables a closer working relationship – for example, if a consumer makes a complaint to MCS, we'll work with the installer to understand the nature of the complaint and how best to resolve it. But it will also provide MCS with greater power to suspend, or even withdraw, installers who are falling short of expectations, especially when it comes to consumer detriment.

## Greater oversight

We know that the vast majority of installers pride themselves on doing a good job, and they want those who consistently deliver bad installs and bring a bad name to this industry to be penalised. That's precisely what these changes to MCS will enable us to do a better job of.

With greater oversight, the new MCS will play a pivotal role in raising standards across the industry and increasing consumer confidence. It means good installers will flourish and leave the cowboys with nowhere to hide.

**For more information on what the new Scheme means for installers, visit:**  
<https://mcs-certified.com/mcs-scheme-redevelopment/>



# More than simply skills training

**It is widely recognised that the current number of qualified installers is a critical bottleneck for the UK to reach its goal of 70GW installed solar capacity by 2035 and encouraging new installers into the sector is mission critical.**

Keen to play its part in addressing the skills challenge, Segen, the UK's largest solar and storage distributor, has made a significant investment in developing a new training academy, designed solely with this in mind, and set to deliver much more to the emerging installer community than simply skills training

We spoke with Steven Skinsley, Training Manager at Segen to find out more about this exciting new facility.

Our goal is to offer the best renewable training experience in the UK to help attract existing electrician and plumbers into the sector



and support them through their journey to qualification as renewable energy installers.

To ensure that the training environment best reflects what installers see in the real world, they have played a key part in getting us to this point. The main driving force behind the academy design has been the ground-up input from real world installers, expert support from our strategic partners and invaluable input and guidance from MCS.

## Q The new centre is a significant development – what led to its creation?

The bottleneck created by the current number of qualified installers is a critical challenge to delivery of the UK goal of 70GW installed solar capacity by 2035. As the UK's largest solar and storage distributor, we felt we had a clear role to play and a responsibility to support existing installers into the sector.

That is why we have invested significantly into the academy development as well as committing to significant subsidisation of the qualifications offered.

Our goal is to offer the best renewable training experience in the UK, to help attract existing electrician and plumbers to come into the sector and qualify as full renewable energy installers.

## Q What has been your own journey into your current role as Training Centre Manager for Segen?

I began my career in the trade as an electrician,

which opened numerous doors for me. The move into formal teaching was a natural one, after I spent some years managing teams of electricians and found a great deal of fulfilment in sharing my knowledge and helping others.

Following several formal teaching and assessment qualifications, I spent many years as a training officer/assessor before working my way up to become the Training Manager at Segen.

## Q What does this role involve and what will success look like for you?

The core role is all about engaging with individuals, and understanding their specific learning needs, while following the qualification curriculum to ensure a consistent quality of training delivery.

Therefore, success will be to combine a 100% pass rate with an engaging and memorable learning experience.

## Q We understand you are placing a lot of importance on delivering a hands-on approach to training. Why is this such an important focus for you?

It is critical that we focus on a hands-on approach to provide new installers with the skills they need to succeed in today's world of renewable energy installations.

Course candidates will be able to get their hands on a wide range of different renewable energy technology from market leading manufacturers. This ensure that candidates will

graduate from our courses with the experience and knowledge to properly install, commission and service residential solar PV installations.

Our courses also include access to our mock roof section, where candidates learn how to work properly with elements such as roof hooks and mounting rails on various roof types.

**Q What can you tell us about the specific course provision?**  
We will be offering a blend of accredited level 3 qualifications in Solar PV, Electrical Energy Storage Systems, EV charge points and Heat Pumps, as well as a range of additional courses that go beyond industry-standard qualifications, representing leading-edge sector skills.

The Segen Training Academy has been custom-built for delivering the courses in the best possible way: offering an outstanding hands-on practical training setup for a wide selection of leading technologies, as well as an excellent classroom learning environment.

**Q We understand you are backing up the core skills training with value-added modules covering such aspects as finance, sales skills and running a business. Tell us more about how this approach is designed to assist the installers in all aspects of delivery in the sector.**

One of the unique aspects of our academy will be our introduction of soft skills training. This allows newly qualified installers to gain the skills required to successfully embark on their journey towards operating their own solar installation company.

By offering skills outside of traditional installation qualifications, we can provide our course candidates with vital skills in finance and sales as well as how to successfully up-scale their renewables business.

These will be important value-added courses that will make Segen trained installers stand out from the rest.

**Q If you could get one key message across to potential users of the new centre – what would you want to say?**

Not only are the products massively exciting, but installing solar PV, battery storage and heat pumps into homes also makes a wonderful, and important, contribution to society. Of course they have a huge positive impact on the environment, but they also make a massive impact on people's lives – helping them reduce their day-to-day cost burdens.

What can be more rewarding than knowing you are contributing to both the environment and society on an individual level like that?

Our job is to make that whole qualification journey as fun and memorable as possible. You won't regret it – find out more now!



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# The Fibox Polycarbonate ARCA cabinet enclosures delivering business success



glass-reinforced polyester is strong and corrosion-free, but subject to surface deterioration over time, exposing unsightly and hazardous glass fibres. The glass fibres of GRP also mean that special ventilation is required when machining it.

By developing enclosures and cabinets made from high-grade polycarbonate, Fibox has overcome the inherent drawbacks of traditional materials to provide a durable, safe and recyclable alternative.



components from physical damage. Integrating the Fibox ARCA polycarbonate cabinet series has effectively addressed the unique challenges of renewable energy product design, ensuring that our solutions are not only efficient but also durable and secure".

The adoption of Fibox polycarbonate electrical enclosures, underscores PAD's ethos of creating products that are energy-efficient, robust, and capable of withstanding the rigors of outdoor environments as well as its commitment to quality and innovation.

Through thoughtful design and engineering, the company maximises the potential of its renewables products, ensuring they meet the highest standards of performance and durability. The exceptional durability was an aspect convincingly demonstrated by David Minnis, when he produced a video showing him driving one of PAD Technology's trucks over a Fibox ARCA Cabinet. His unconventional approach superbly showcased the strength of the Fibox cabinet enclosure, and is successfully winning him business over his competitors.

**To find out more:**  
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**Email: [salesuk@fibox.com](mailto:salesuk@fibox.com)**  
**<https://www.fibox.com/>**  
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**“ENCLOSING Innovations” is a slogan well known throughout the electrical industry.**

A statement from leading enclosing solutions provider Fibox, it highlights the design innovation inherent in the company's enclosures as well as their outstanding ability to protect their customer's innovations. Acknowledging the challenge faced by design engineers in choosing the optimum material for an electrical enclosure, Fibox balances the importance of ensuring a long service life in demanding environments, with the need to meet application requirements.

Painted mild-steel, stainless-steel, and glass-reinforced polyester (GRP) are common materials for electrical enclosures but have their limitations. None of the three is easily recycled; mild steel scratches and corrodes easily, while stainless steel and mild steel will both dent and conduct electricity, posing safety risks. In addition, steel degrades and is opaque to radio signals while

## A case in point – PAD Technology

At the forefront of renewable energy innovation, technology solutions and OEM service provider PAD Technology Ltd has incorporated Fibox polycarbonate electrical enclosures into its renewable energy product design – a strategic decision that has delivered a multitude of benefits. The design and engineering team at PAD carefully consider factors such as UV resistance, thermal stability, and mechanical strength when selecting materials.

Nicola Newman Marketing Manager at Pad Technology said: "The Fibox Polycarbonate ARCA range has excellent UV resistance which preserves the enclosure's integrity and appearance over time. They are easy to machine, without necessitating expensive ventilation equipment.

"Additionally, the material's impact resistance is crucial for protecting sensitive electrical

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# ARROW ENERGY SOLUTIONS

Solar as standard? Is it time solar systems were mandatory for every new build?



**WITH less than 5% of homes across the UK equipped with solar panels, and a surge of new homes set to be built under the new Labour government, is it time to make solar systems mandatory for new builds? Andrew Woodruff, Managing Director of Arrow Energy Solutions, an installer covering the South and Southwest, explores the question.**

With our national commitment to improving our sustainability, underpinned by the UK government's ambitious net zero target, it is perhaps surprising that, even now, the overwhelming majority of homes in the UK don't have solar panels – and that includes our new build homes too.

While some house builders are making strides in this direction – Taylor Wimpey, for example, reported that in 2023, “20% of our homes integrated on site PV panels”, the fact remains that solar systems remain the exception, rather than the norm, on new homes.

With the clear benefits not only for the planet but for homeowners' bills, what is holding us back? And what needs to change?

## The legislative landscape

At the moment, there are minimum standards for energy efficiency new builds must comply with. The most recent version of the Building Regulations, which came into force in June 2022, requires Standard Assessment Procedure (SAP) calculation and a predicted Energy Performance Certificate (EPC) to be submitted before construction begins.

While including energy-saving measures enables developers to comply with minimum standards, the specifics are left to their discretion – there is no mandatory requirement for new builds to include solar panels.

There are precedents for this out there though. Tokyo, one of the world's most populous cities, will require solar panels on all new homes from 2025. And in March 2024, Members of European Parliament (MEPs) voted to adopt the EU Solar Standard, which will require the installation of

solar on buildings across EU member states.

Scotland's stricter rules on carbon reduction in new homes introduced in 2016 have also proven effective. The proportion of new builds with solar panels in Scotland increased from 10% in 2016 to 70% – demonstrating the efficacy of a robust regulatory environment in driving the adoption of solar technology.

Andrew underscores the missed opportunities in the UK's current approach: “The standards we set for new homes can put us on the right path to net zero by 2050, but we need decisive action.

“The advantages of solar are a no-brainer in the vast majority of new homes – it should be a standard practice, not an optional extra, but with any big change in practice in any industry, change is too slow without a legislative nudge in the right direction.

“The new standards coming in 2025 are a step in the right direction but the systems minimum standard will be too small for most residents, who in turn will have to discard and upgrade the inverters and add batteries for it to be of value.

“Bear in mind that new homes will be built with

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air source heat pumps which are high energy users and their consumption will need to be offset with solar energy. An ASHP almost doubles a home's energy consumption. Combine that with general home usage, and charging electric cars and the system should not be minimum spec."

## New standards coming

Up until now, the Government has held back from requiring developers to install solar panels, despite support for the idea. The response from the then Government Department for Levelling Up, Housing and Communities, to a petition calling for mandatory solar on new builds explained its position: while they expected "most developers will use solar panels to meet the recent uplift in energy efficiency" they stopped short of making it a requirement to do so in order to "enable innovation and tailoring to individual sites".

Currently under development, the 2025 Future Homes and Buildings Standard will deliver even higher energy efficiency standards. The aim is that, from next year, new homes and buildings should be 'zero carbon ready', with no retrofit work for energy efficiency necessary to enable them to become zero-carbon.

However, the latest consultation document, published earlier this year under the previous government, consulted on two options – one with and one without solar PV panels.

Option 1 includes "high-efficiency solar PV panels covering the equivalent of 40% of the home's ground floor area" along with a wastewater heat recovery system, increased airtightness and a decentralised mechanical ventilation (dMEV) system.

Option 2, which does not include those elements, would have lower additional build costs but be less beneficial in terms of consumer bills.

Both include, "a high-efficiency air source heat pump and good fabric standards to minimise heat loss from windows, walls, floors and roofs and high performance standards for domestic hot water storage."

The consultation sets out that option 2 is the minimal approach to achieve 'zero-carbon ready' homes that deliver at least 75% carbon savings compared to 2013 energy efficiency requirements. However, it is essential, believes Andrew, that option one is what is taken forward: "The time for half measures is over. We need a clear mandate for solar panels on new builds. The technology is there, the benefits are clear, and the need is urgent. It's time to act."

## Challenges and incentives

Despite the clear advantages, several factors contribute to the reluctance in making solar panels mandatory. One significant barrier is the initial cost. Installing solar panels can increase construction costs by an estimated £6,200 per

home. However, this upfront investment is offset by substantial long-term savings on energy bills, estimated between £910 and £2,120 per year. Over a solar panel system's lifetime, savings can reach up to £40,000 for a mid-terrace home and upwards of £200,000 for a detached house, a report by Solar Energy UK found.

The same analysis found it was 10% cheaper to install a residential solar system on a new build than to retrofit one. A solar system embedded from the start can also mean greater efficiency can be achieved, with insulation, orientation, and airflow able to be considered during the design phase.

Then there are the obvious benefits in terms of sustainability. The Energy Saving Trust estimates that the average UK home with a solar PV system can reduce carbon emissions by between 1.3 to 1.6 tonnes per year.

The installation of solar panels also aligns with broader trends in the housing market. A survey by Landlord Today found that nearly three-quarters of respondents wanted their properties to be more eco-friendly. More than half of the participants said they would specifically seek out properties with eco-friendly features, and two-thirds indicated they would prefer to buy or rent a property with these attributes. Similarly, Legal & General research shows that 13% of renters are willing to pay a premium for a low-carbon property.

## Now is the time

With the rising tide of consumer demand, there is also increasing support within the home building sector. A coalition comprising the Good Homes Alliance and Bioregional, backed by the UK Green Building Council and LETI, wrote an open letter to the Government, prior to the election, urging them to be more ambitious with the Future Homes Standards, highlighting, in particular, the omission of solar panels in the Option 2 notional specifications, and demanding that all new homes incorporate integrated solar PV as a standard feature.

The Local Government Association (LGA) has also come out in support adding: "We strongly support solar PV on the roof tops of all new homes as it can reduce the amount of land required for ground mounted solar."

There appears to be some political will

at national government level too. A survey conducted by YouGov during initial consultation on the new standards, reported that seven out of ten MPs would support the introduction of mandatory solar panels on new builds as part of the Future Homes Standard. Only 13% (just over one in ten) said they would oppose this.

With the new Labour government announcing plans to build 1.5million new homes within five years, and reinstate housing targets for local authorities, now is the time is now to legislate, Andrew believes.

"Labour has been clear about its ambitions to get Britain building homes again with plans for 1.5 million new homes in five years to tackle the acute housing crisis – but I would argue this is also an opportunity and a pivotal moment to tackle the climate and energy crisis.

"We have a unique opportunity to set a strong foundation for the future. However, while a great deal has been said about the huge expansion of housebuilding and an immediate blitz of planning reform, the language of "low carbon" and "net zero" were conspicuous in their absence from these particular announcements. The two must go hand in hand.

"I am still waiting for the 'penny drop' moment when there is collective recognition of the long-term benefits of integrating solar panels into new builds. The rationale for doing so is clear – not only do they enhance energy efficiency and reduce carbon footprints, but they also make homes more attractive to environmentally conscious buyers and renters, potentially commanding a higher sales price, and saving homeowners money in running costs.

"We already have a huge mountain to climb in terms of improving the current housing stock, so it seems madness to me that we are not moving faster to ensure new homes are properly equipped to be net zero, even net contributors to the decarbonised grid – and for that, solar is the obvious choice.

"We have already seen this with insulation. Only in recent years have new homes had a focus on genuinely insulating homes. We have been retrofitting insulation to old housing stock for years because this was not addressed correctly.

"With home building currently so high on the political agenda, and a surge in building on the horizon, now is the moment to get this right."



# Greenhome Heating

One green choice can lead to many



**In this interview Mark Wooler, Director of Greenhome Heating, discusses the opportunities for the renewables sector and the importance of training for installers and tells us how he rescued his business from the verge of closure.**

## **Q Describe the background of the company**

I started Greenhome Heating in 2016 on my own. After working with a heating company on the EAGA and ECO schemes, I wanted to break into the boiler installation market and eventually get qualified to install boilers under these schemes myself. But things didn't go as planned. Without enough savings, I had to spend most of my time finding ways to make money instead of focusing on growing the business the way I wanted to.

## **Q How has the business changed/evolved since then?**

From 2016 to 2020, we stayed busy and gradually expanded by offering a mix of services. By then, we had five employees and often took on bathroom installations because they helped fill the schedule and provided job security. The downside was that none of our employees enjoyed doing bathrooms, leading to lots of headaches and unhappy staff.

This frustration led me to a breaking point where I decided to stop bathroom work altogether and focus solely on building a heating company. This was a rash decision since bathroom jobs made up about 60% of our workload. The following year was incredibly tough as we tried everything to grow the heating side of the business without letting any employees go. We spent a lot on marketing and chased heating contracts but had no luck. By

January 2022, we were on the verge of closing down.

Fortunately, that's when I joined two fantastic courses. The first was the Heat Geek course, which completely changed my view on heat pumps. The second was a business development course (Inner Circle with Craig Wilkinson), which taught me how to market effectively to my target audience. This course was crucial in teaching me how to run a real business and gave me the right mindset to handle future challenges.

## **Q What are your main service offers/areas of business?**

Our main services are now heat pump and solar panel installations. We still do boiler installations, but we're usually booked up well in advance, and most people are pretty desperate when they need a new boiler.

**Q Key facts and figures**  
 From 2022 to 2023, our turnover grew from £456,000 to £639,000, and we're on track to hit £1,000,000 this year. We achieved this by focusing on our most profitable products and services without hiring any extra employees (we still have 6). We've made all our processes as efficient as possible and streamlined the installation process to save time and ensure quality.

**Q What are your goals for the business for the next few years?**  
 Over the next year, I plan to dive deep and systemise as much of the installation process as possible. This way, we can guarantee the same quality of installation and customer experience every time as we expand the business. My goal is to double the number of installations we're currently doing by leveraging strategic partnerships and growing our client base.

**Q What's your view of the renewable energy landscape as it stands?**  
 I think there's a huge opportunity for growth in the renewable market for companies that want to dive deep, expand their knowledge, and do a top-notch job for their customers. Unfortunately, some businesses see this market as an easy way to make money without learning how to design systems correctly. These are the ones that will give heat pumps a bad reputation.

**Q What do you think are the main challenges for your business/the renewable industry at the moment?**  
 Training installers has been a real challenge. Many of the heat pump courses I've attended have been terrible and aren't setting installers up for success in our industry. They often skip over crucial elements, especially the low-temperature design aspect, which is essential for proper installation and system efficiency. This lack of comprehensive training means that installers are not fully

prepared, leading to poor system performance and dissatisfied customers.

Without a solid understanding of these core concepts, installers are likely to make mistakes that can damage the reputation of heat pumps and renewable energy solutions. Proper training should cover every aspect of the installation process, from design to implementation, to ensure that installers can deliver high-quality, efficient systems. It's frustrating to see courses that don't provide this, as it undermines the potential of the renewable energy market and the trust customers place in these technologies.

**Q What are the main opportunities for your business/the renewable industry at the moment?**  
 The Boiler Upgrade Scheme voucher is a huge opportunity right now because it makes getting a heat pump installed a much more appealing option for customers. We've noticed that once a customer starts with one green technology, they often start thinking about other ways to reduce their carbon footprint.

For example, someone who buys an electric car might soon be looking into getting solar panels and a heat pump within a year or two. This trend shows how one green choice can lead to a series of environmentally friendly decisions, which is great for the industry and the planet.

**Q Do you agree with the government's net zero strategy?**  
 I think the targets are ambitious, and my main concern is the number of qualified people we have to actually do the work. It's previously been about pushing as many people as possible through training programs that are outdated and not good enough to teach engineers how to design and install quality systems. New build housing is actually producing some of the worst installs, so over the next few years, there's going to be a lot of unhappy people.

**Q Do you have any particular ideas/solutions for advancing the net zero agenda?**

I think more homeowner education is needed on how well heat pumps can work, especially through positive news stories instead of the negative articles we often see. A lot of people still think heat pumps don't work and will just end up costing customers a lot of money. This can be true with bad installations, but if customers are educated about how well some systems can operate (like with open energy monitors) and are shown where to find good installers and what questions to ask, they can avoid bad installation companies and have a much better experience.

**Q Highlight a business achievement, project or case study you're particularly proud of**

It has been an incredible two years at Greenhome Heating. In 2023, we proudly received our first award, and we have recently built on that success by winning two more accolades at the 2024 North East Energy Efficiency Awards for our achievements in the boiler and heat pump industry.

Additionally, we were honoured with an invitation to share our insights and expertise with some of the industry's leading installers at the 2024 Installer Show. We were featured on the Heat Geek stand, providing us with an excellent platform to discuss our innovative approaches and connect with other professionals dedicated to advancing energy efficiency.

**Q Are you involved in any industry bodies, membership organisations or campaigns that you'd like to highlight?**

I would like to give another mention to the two courses that really changed the trajectory of my business and have massively helped me get to where we are today:

Heat Geek and Craig Wilkinsons Inner Circle.



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## Going off-grid: a life dedicated to decarbonising energy systems

**W**ere in conversation with Andy Rankin, the founder and Managing Director of Midsummer Energy, the award-winning UK renewables wholesaler that exists to “deliver the most innovative products at great prices, alongside fantastic customer service”.

A former climate scientist who started a solar company from his off-grid home 18 years ago, Andy likes to build things from scratch, whether that’s companies, houses, solar farms, software or freight bikes.

To the best of our knowledge, Andy is the only MD in the industry with ultra-running titles under his belt and the only one to have begun his journey from a solar-powered canal boat. With our intrigue truly sparked, we caught up with Andy to learn about his journey from establishing his own sustainable lifestyle to setting up a business that would help others to do the same and hear about the challenges of early off-grid installations, his realisation that renewable energy was a viable business proposition, where software services fit into the picture and what the future may hold.

**Thank you for speaking with us Andy!**

**Q** Graduating in oceanography and working with the British Antarctic Survey suggest climate and nature have long been among your interests. Did your studies and experience influence your future trajectory?

Absolutely! I was exceptionally fortunate to work for a few years within the ice core group at BAS, studying how climate has changed in the past. Spending some time at Halley, the research station where the ozone hole was discovered, I realised that this planet we live on is fragile and precious, and easily damaged by man but that damage isn’t a given. The world came together and took action to address ozone depletion, and although it’s a much greater challenge, we can do the same for carbon emissions.

Although, ultimately, I decided the academic life was not for me, my experience as a scientist made me determined to spend my life doing what I could about greenhouse gases and climate change.

**Q** That explains your drive for sustainability, and your off-grid life, but how did you end up afloat?

From a very young age I’ve enjoyed messing around on boats. When I moved to Cambridge to



work for BAS I was cycling to work alongside the river one day, rueing Cambridge property prices – a long way out of reach of a young academic – and thought ‘hey, why don’t I get a boat instead?’ Having just started a career in climate science I wanted to be as low carbon as possible, so rather than a boat with a diesel engine I decided to go electric.

**Q** Canal boats with solar panels atop and even electric-powered ones are an increasingly common sight, but I'm guessing it was a very different picture 25 years ago. Was it easy to find the solutions you needed?

There have always been a few eccentrics who lead the way, and I wasn't the first to convert a narrowboat to electric propulsion. So there were a few examples to follow, and there were one or two small companies making suitable motors and controllers. But it was very much a DIY assembly project – there weren't any companies who could offer to come and fit all the bits together. It was great fun though – a friend who was studying engineering snuck us into the university workshops so that we could mill the prop shaft to fit the motor. You couldn't just buy the right coupling off the shelf.

**Q** How did your own journey into sustainable living translate to the creation of Midsummer?

After deciding the academic life wasn't for me I spent a couple of years travelling, without any real future plan. Twiddling my thumbs in Cambridge after returning, I got chatting to a friend who had bought solar panels for his own boat but found good information and advice hard to come by. Thinking 'hey, I could set up a website doing that', I bought an old laptop, headed to the library to get an internet connection – this was in the days before even 3G data, let alone 4G or 5G, so internet on a boat was a challenge – taught myself some html, and started selling solar panels.

Close on 20 years later, I'm still doing it.

It would be hard to find a smaller business than Midsummer was in the early days! Operating as a sole trader, the 'warehouse' was the front room of my narrowboat – 7 foot long by 6 foot wide. The first year I turned over £20K, focussing entirely on off-grid systems. Most customers were buying components for narrowboats, yachts or motorhomes but, over the next few years, we supplied a fair number of systems to run scientific experiments or monitoring equipment in remote places as well. Midsummer off-grid systems ended up all over the place, from the ice caps of Antarctica and Greenland to a beach hut in Gabon.

It was the introduction of the Feed-in Tariff, in 2010, that really kick-started Midsummer's growth. We established a wholesale division headed up by Jamie – now our commercial director – and also did a number of installations ourselves around Cambridge.

The growth hasn't stopped since!

**Q** That growth has seen Midsummer evolve from those early individual sales to a significantly expanded range offering a one-stop shop for installers. How do you ensure you don't lose sight of your original vision?

Whether it's a couple of small flexible solar panels for a yacht, a 200kW array for a commercial building, or a heat pump for a domestic property, the aim is exactly the same as it always was – to decarbonise our energy systems. I'm only a small cog in the machine now, but we've always looked

for people who share our enthusiasm and passion for low carbon energy, and it's that shared sense of purpose that continues to drive Midsummer forward.

**Q** You still offer a dedicated service to those seeking to decarbonise off-grid settings – what unique challenges do they face and how is that business?

Off grid business remains good – there are as many people as ever who live off the grid on boats or remote properties up and down the country. Of course the market is much smaller than the grid-connect solar or heat pump markets so off-grid sales are now a relatively small part of our turnover. But we keep a team that specialises in off-grid systems and it's still an important part of what we do.

Off-grid systems need to be designed very carefully. If your grid-connect PV system fails you will be paying more for your electricity, but your fridge will still be running and you can still boil a kettle. With off-grid systems you need to be extremely careful with your design to make sure you have sufficient power and storage to run your appliances. There isn't any backup when you are unplugged from the grid.

**Q** Quality and support seem to be high on your list of priorities?

When I was looking to fit solar panels and go electric on my narrowboat, I found there wasn't a lack of sellers even back in those early days – but there was a lack of sellers giving good



technical and sales support. That was one of my earliest motivations for starting my own business. But I think it just makes good business sense too. Customers might shop around and buy for a while from the company that gives them the lowest price, but that company will make no margin and will build no loyalty from their customers. We don't want to just be box shifters. We want to be a positive force in the industry.

**Q You also provide two key industry software services in Easy PV and Heatpünk. How did they come about and how have they evolved?**

We did our own solar installations for a number of years immediately after the introduction of the Feed-in Tariff. I used to draw a roof to scale to work out how many panels we could install; use mounting system manufacturer's systems to work out the mounting components; use inverter manufacturer's tools to find a compatible inverter; do some performance calculations in a spreadsheet, and create a nice quote in a word processor. The process was painfully inefficient. So I threw together some very basic tools to simplify our own surveying and quoting procedures. Fast forward a couple of years, and we decided to move away from installing to focus on the growing distribution business. The tools had saved us huge amounts of time, and so we decided to create an online service – Easy PV – to give installers access.

When we branched out into heat pumps it was natural we would aim to do the same thing for heat pump installers. We took Easy PV, stripped out the solar design tools and added tools for heat loss surveying instead, and Heatpünk was born.

In the early days I did a lot of the software development work myself – and looking back the tools were laughably basic. We're extremely fortunate to now have the resources to employ a fantastic software development team who are building far more sophisticated tools than I ever could.

**Q Why is design support such an important part of the Midsummer offering?**

Installers don't want to be doing paperwork and design. They'd rather be talking to customers or up on the scaffolding. We can save companies a huge amount of time and make sure that designs are accurate and compliant with all the regulations, and that quotes look great. Ultimately, that reduces the cost and improves the quality of solar and heat pump installations.

Over the years we've invested an enormous amount in making the journey for installers as easy and simple as possible when designing a solar array or heat pump system through Easy PV or Heatpünk. We're soon to release our AI-

powered upgrade to Easy PV that can literally design an entire solar PV system – with the address being the only input! We create a 3D model of a house, work out which are the best roofs for solar, work out the optimum array layout and calculate the mounting system down to the last nut and bolt, find a compatible inverter and build a full bill of materials. All without human input. So for the installer we can cut out a huge amount of time, and money, on the design side.

But it goes further than that. With automated PV design we, first of all, reduce the price that a customer pays because the installer has lower overheads and can be more competitive. And, secondly, we speed the process up. An end customer can now get an indicative price for a solar installation using Easy PV's 'instant estimate' tool in a few seconds, right from our installation partners' websites. The end customer can go to two or three such installers in an evening and get prices they can be pretty confident in.

**Q Alongside your own software development, you are also supporting new technology through investment in the Bristol-based startup Nusku and developing industry partnerships with companies such as InstaGroup and Solarport. Are partnerships becoming increasingly important?**

Getting this country to net zero is not something that any one company can do on its own. We need to work together. As a distributor and software provider, Midsummer sits in the middle between manufacturers and installers, and we can add value on both sides – and they can add value to us.

Nusku is a good example. They're designing a great product that is breaking the mould – but they need a route to market, and we can provide that through Heatpünk and Midsummer. We also have installers – from small local firms to energy companies – who we can work with to bring new features to Easy PV and Heatpünk to improve their workflow.

It's the part of the job that I find most satisfying these days – working with so many other fantastic companies that are equally committed to driving the uptake of renewables. Together we are stronger.

**Q What barriers remain and what more needs to happen to overcome them?**

Heat pump deployment is way behind where we need it to be. We need to drive both demand and supply and demand is the bigger problem.

Currently, it costs as much, or more, to run a heat pump as it does to run a gas boiler in many houses. We need to change the economics so that the heat pump is cheaper to run. That

can be achieved, to some extent, by using time-of-use tariffs and smart controllers (or just by adding a big solar array and a battery), but that adds complexity to the system which may not be appropriate for many end customers. Fundamentally, to deliver lower running costs for heat pumps, the big change that is needed is cheaper electricity and more expensive gas.

Demand is also depressed by a perception in some people that heat pumps are ineffective or 'not suitable for my house', which, in most cases, is nonsense. That will be countered slowly as heat pumps are installed more widely – it's harder to argue that a heat pump isn't suitable for your house when your neighbour has one installed and tells you in the street how well it is working.

In the early days of grid-connect solar there was just as much scepticism about PV arrays, but people now know that they are reliable and effective.

**Q What are you hoping for from the new government?**

I'm hoping for a real commitment to driving down carbon emissions. That commitment, from the last government, was lukewarm at times, and policy flip flops like postponing the Clean Heat Market Mechanism at short notice did a great deal of harm. Installers need confidence to invest in training and in building up their businesses. They need to know that there will be a stable market for their services.

The levers that the Government need to move to drive up demand for heat pumps and solar aren't huge. Higher building standards; a small change in the relative price of gas and electricity; allowing more heat pump installs under permitted development – these are not big changes that need to be made. I'm quietly optimistic that we do now have an administration that takes the need to address climate change seriously, so I hope that we're going to see some very positive action on renewables over the next few years.

**Q What does the future hold for Midsummer?**

I can't claim any skill as a soothsayer – I would never have predicted 18 years ago that we would be where we are now! In the immediate future though we're expecting that demand will continue to grow, especially for heat pumps. We've got another 30,000 sq ft of warehousing coming into operation shortly that we are raring to fill with more renewables.

On the software side we've got some fantastic new features that we are working on – Easy PV is about to become even easier! So watch this space.

After that, we'll just keep riding the solarcoaster, as we have for the last 18 years, and we'll see where it takes us!



## A dedicated new space for empowering women in the retrofit industry

**R**ETROFIT professional and interior designer, Ellora Coupe, was frequently being asked for advice from friends and family on navigating home renovations, particularly when it came to making sustainable choices.

They found that navigating personal budgets, tracking deadlines, putting trust in tradespeople and learning about different solutions was not clear cut.

So, Ellora created an online platform called Her Own Space to provide women homeowners with knowledge and support for their retrofit projects.

Her Own Space has so far united more than 3,000 women on their renovation journeys.

Ellora felt there was a need for a similar space for both existing and emerging women professionals in the retrofit industry. So she

reached out to as many as she could to find out what sort of support was lacking and, earlier this year, Her Retrofit Space was launched.

The membership-based platform includes discussion forums, mentoring, opportunity boards, webinars, a resource library, live demos, in-person events, a professional directory, business support tools and wellbeing advice, in a one-stop shop designed to empower professional women in retrofit.

We met with Ellora to find out all about Her Retrofit Space, the challenges facing women in the sector, and what she hopes the platform will achieve.

**Q** How did you get into this industry?  
My interest in this area actually started as a kid as my father was a builder. He was Austrian and a huge environmentalist. I

remember him inventing a wind turbine to try and power houses that he was working on. I grew up with sustainability being key, so when I had the opportunity about 4-5 years ago to delve into retrofit, the doors opened. It was just a passion project at first, in that I was really excited that the technology was starting to exist to do what my father had talked about all his life.

**Q** How did you get involved in retrofit specifically?  
I gradually became invested in women, predominantly homeowners at first, and the struggles they face in undertaking any renovation or retrofit project. I decided during the pandemic that if I was going to work in this sector to support women, it really needed to embrace retrofit and the methods and technology around that. It wasn't right to continue down a renovation



route without creating more awareness. And so I initially set up Her Own Space, a platform for women homeowners to get support from each other. Then women in the profession started to join, such as retrofit co-ordinators and architects involved in sustainability, who really liked the fact that there was a space aimed at women homeowners. They inherently wanted to support the homeowners without any agenda to sell.

### Q How did Her Retrofit Space come about?

As well as a lack of women in the sector in general, there was also a really poor portal of access for women from a career path point of view. I spoke to women from lime plasterers to electricians, who said it's always been an uphill battle, even when they are interested in this industry.

So at the beginning of this year I really felt passionately that there needed to be a space and a platform to support women, ultimately all with the same goal of driving net zero and really looking at the energy and performance of our homes.

I could see a benefit from women having a space to have those conversations, whether they be personal, or professional, about their careers, and to find access to training. Another obvious opportunity was for women to build their businesses and services around women homeowners.

They really wanted to be part of a professional directory, available for women homeowners to access. So we did a survey. We captured the thoughts and opinions of 92 women working within the professional retrofit industry, either installers, architects, surveyors, or retrofit co-ordinators across all sectors and across all regions. And they really spoke up about the struggles they were having, what they wanted from a platform and how they wanted to access it, what kind of training, what kind of showcasing they needed and what kind of directory they wanted to be part of.

As a result, Her Retrofit Space was born and launched on June 20th.

### Q How is it going so far?

We are growing a community of women in this space and empowering women who might run their own businesses. It's about providing the support they need on marketing better to women homeowners.

It's being able to collaborate on projects together because we know a lot of retrofit projects require a good team of professionals. We have 15 minute webinars on various topics, a live heat pump demo with Leah Robson and lots of other interesting things coming up.

We're also planning more in-person events.

### Q Why do you feel it's important to have a dedicated space for women?

There's a high efficiency of exponential growth that's known and reported when women collaborate. Setting up my business four years ago, I found tremendous support from a female-only cohort of women who are still my go to today and the support I get from them is both professional and personal.

There's also the emotional stress of being in an industry that's trying to make drastic changes quickly. There's the knowledge sharing and just a different type of conversation. That achieves great strides.

It's also understanding the pathway for the women homeowners buying into renewables and them having access to empathetic professionals. A sense of empathy, I think, is a key aspect of driving retrofit uptake.

### Q How does it support the net zero agenda?

There's a lot of research to show that women have a huge appetite for sustainable choices.

And the net zero intentions are so important for those professional women in the industry already. Interestingly, the women homeowners have the appetite, but they don't always know what green looks like or how to achieve it.

So, in our platform are two exceptional women homeowners who undertook retrofit projects themselves and didn't actually understand what they were doing until the end. The insights of women homeowners who have done that is very informative for professional women, in knowing what the pain points and triggers are.

### Q Does Her Retrofit Space have a role to play in furthering the skills agenda?

Absolutely. One of the key aspects is that any partners who sign up to support us are funding not only existing professional women to have a membership, but they also have to fund the equal amount for emerging professional women. So we have got students, trainees and apprentices joining. It's really important that they have a mentorship scheme.

And other professional women in the group can say whether they are happy to be a mentor as well. We're exploring colleges and universities we could attend as that might be a really nice way to introduce people in the built environment to retrofit and the green industry pathway.

Retention is also key. One thing that I unfortunately found from the survey was it's not only a question of attracting women, it's also retaining women in the industry.

It was clear that some women are becoming

very despondent, they can't access the training they need, or are having to fund it themselves. They were feeling very isolated, or sometimes, even when they are technicians, data scientists or technologists in every way, shape or form, they were being put in the sales or softer skilled jobs.

So women are asking questions about how to navigate those things in our platform and getting the right advice from people who want to see them succeed.

The idea with our funded sponsors is they're investing in their own staff, providing memberships because they're focused on those staff members.

A lot of research shows there is safety in talking in an independent space about the challenges they face that they would not normally share in their own business environment.

### Q What do you think about the scale and urgency of the retrofit challenge?

Oh it's like we need to do it yesterday. There's also a lot of lobbying going on, like the hydrogen lobbying. I'm having homeowners saying, 'we might just hang in there for the hydrogen', and it's like, this is not even happening on a homeowner scale.

And obviously the narrative is very easy to say 'don't do it now, do it on the next round'. Wait for the technology to improve. But the technology has evolved. It's shifting the mindset with homeowners that the investment is long term enough to do it now rather than wait five or ten years.

I'm really disheartened by how slow things moved in the last 20-30 years. You only have to look at Europe, especially, to see what they have put in place. Obviously green finance is a really big conversation in terms of uptake of technology. I know we have the Boiler Upgrade Scheme, but again people don't really understand it.

Green mortgages are something that I really think hasn't been addressed like it has in Europe, so I think policy changes are really needed as well, but until then, I'm going to try and do as much hands-on awareness work as I can.

### Q What's the overall goal?

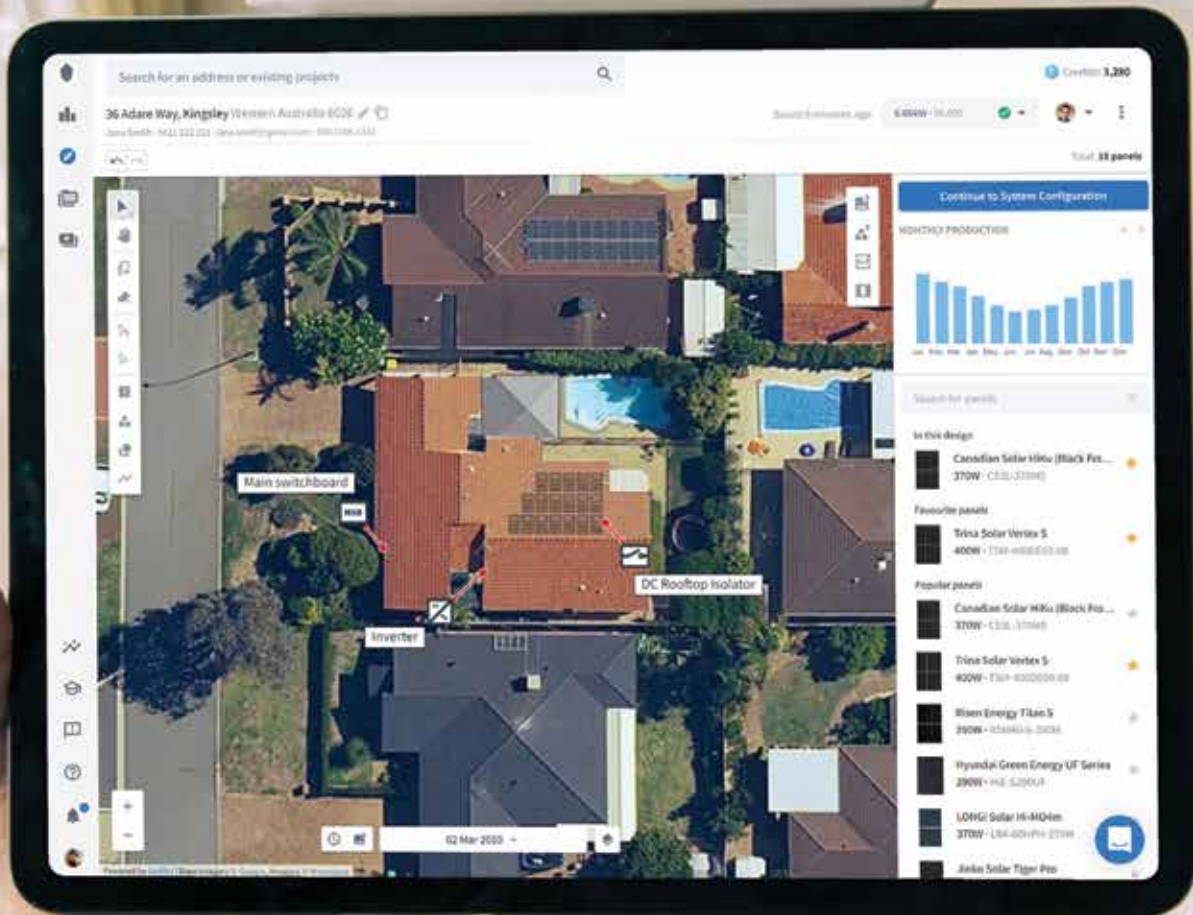
I'd like to see more women doing more interesting work, more exciting work, collaborating with the right people and making those differences to homeowners that are really needed and for me then, my job is kind of done.

We are on a trajectory to grow many features within the platform and have already started to build an internal resource of projects that the professional members have personally worked on. It provides insight into their approach, materials and both challenges and wins to help others through their learning journey.



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# Installer Insights For Business Success



## Rowan Energy – improving customer outcomes

**A** VITAL aspect of life as an installer is ensuring business success. At Solar & Storage Live there are plenty of opportunities to hear from conference speakers share their thoughts on the importance of having a competitive edge.

In this section, we hear from Rowan Energy, HIES and EUPD Research as they share their own insights for business success.

### Rowan Energy

David Duckworth, CEO, Rowan Energy, explains how the company’s customer reward scheme can overcome the challenge of long payback for homeowners, giving your business a competitive edge when it comes to winning business.

Rowan Energy is transforming the UK residential solar industry by merging advanced, low-powered (and therefore low-carbon) blockchain technology with solar energy, offering a unique solution that benefits both homeowners and solar installers.

While technology in the residential solar market has remained relatively stagnant for years, our Rowan SmartMiner is breaking new ground. It’s more than just a solar device – it’s a powerful tool that combines a blockchain validator with a

smart meter, revolutionising how solar energy is monitored, managed, and monetised.

### Reducing payback time

A key challenge in the solar market has been the long payback period for homeowners. Rowan Energy addresses this by offering an additional 10p per kWh for every unit of solar energy produced, earning homeowners up to £450 per year. This significantly reduces the payback time, and makes solar installations more attractive, creating a strong financial incentive that boosts demand for solar systems and gives installers a clear advantage when partnering with us. Since 2021, we have paid out more than half a million pounds in rewards, with customers continuously earning from their solar investments.

Rowan Energy currently monitors nearly 10 MW of solar across our network, showcasing the scalability and impact of our platform. Installers can differentiate themselves in a competitive market by offering Rowan Rewards Packages and fitting Rowan SmartMiners. The SmartMiner not only tracks energy production with precision but also validates transactions on the Rowan blockchain and mints real-time carbon offset certificates onsite. While these certificates contribute to reducing carbon footprints, homeowners directly benefit from the additional



income generated through Rowan Rewards.

Rowan Energy gives installers a competitive edge, enabling them to offer a cutting-edge solution that reduces carbon footprints while increasing energy savings. By partnering with Rowan, installers can attract environmentally conscious customers, drive sales, and elevate their business in a rapidly evolving market.

**You can attend David’s presentation at S&S Live to pick up additional valuable insights to help you gain a competitive edge.**

## HIES – Business support for renewable energy installers

**F** AISAL Hussain is CEO of HIES, a Chartered Trading Standards Institute Consumer Code within the renewable sector whose vision is about transforming consumer protection to ensure consumers are dealt with professionally. Here Faisal explains the importance of this for installers.

Renewable energy installations, such as solar PV, appeal to homeowners because they can

see an easy way to control their energy costs and contribute to a zero-carbon world. Solar PV technology is easier for a consumer to understand and is a tried and tested alternative to other energy gas-fuelled sources.

For renewable energy installers, there is only room for growth in this sector and opportunities for diversification (and profit) for companies who are looking to move into this sector. As part of its role as a Consumer Code, HIES offers a wide

range of support for renewable energy installers to ensure high service levels and standards, to safeguard both installer and consumer. Our installer benefits help installers at every step, from setting up and registering a business in this sector, right through to an annual review.

### 1. Getting started

If you are just getting started in your renewable energy journey, we can help installers to set up

**HIES** – Business support for renewable energy installers – continued



and introduce you to relevant training providers and quality management systems. In addition, installers can benefit from a free Trustmark membership on becoming a HIES member, which is something consumers put trust in. In addition, we can help with information on platforms which will minimise internal processes, and introductions to manufacturers and distributors.

**2. Marketing & digital**

We appreciate that not all installers have the skills or resources to put marketing strategies and processes in place, but HIES can help with that too. It's a key part of the process of attracting enquiries and leads and should be part of any business plan. Marketing support is available through HIES, along with help and advice on digital technologies.

**3. Selling**

We can provide sales training, information on Government schemes and grants, introduce you to finance brokers or lenders and much more. This ensures your team is in the best place to generate and close leads and attract business.

**4. Installing**

Once the foundations of the business are in place, your campaign is running, and leads are being generated, there is more support. We provide 24/7 access to the HIES online portal, making it easier to register your jobs, and can introduce you to sub-contractors as well as provide technical and product support.

**5. Customer service & satisfaction**

Neither buyer nor supplier wants to have call-backs for a faulty installation, for example, so HIES provides support on how to provide an effective service and how to measure and monitor customer satisfaction. If any complaints arise, we are here to listen in confidence, and can provide mediation to you and your customers to help settle any disputes that may arise.

**6. Annual review**

We can give your business an annual review, to help identify any issues that may cause problems going forward, and to help you keep on track. We can provide documentation assistance to help you comply with legislative requirements and advise on budgeting and cashflow.

***You can attend Faisal's talk at S&S Live to hear more about the benefits you can receive as a HIES member.***

**EUPD Research** – How to build a successful PV installation business

**S** AIF Islam, Senior Consultant, EUPD Research, a leading market intelligence institute and consulting firm with a special focus on renewable energies, shares insights on building a successful PV installation business.

When talking about clean energy in general, and solar power in particular, people focus on the manufacturers, transforming our beautiful planet with their revolutionary technologies and innovative business models. However, there's a tendency to forget the vital market intermediaries, the link between the industry and the consumers – the PV installers.

For 17 years now, EUPD Research has been surveying PV installers in terms of current key issues, procurement management and their brand landscape. The resulting report, the "PV InstallerMonitor | EES InstallerMonitor" is the essential guide for manufacturers and other players in the industry, to adapting their product and service portfolios, and to understand the needs and requirements of their customers. However, installers can also take the opportunity to learn from their peers, in order to expand their business and their customer base. The recent survey of PV installers in the UK shed further light on the current market demands, and today EUPD Research is happy to share some of these insights.

EUPD Research recently surveyed 103 British PV installation companies, some with large

installation volumes and some with smaller capacities, pure solar installers but also electrical installers, roofers, and more. While the majority focusses on the residential segment (up to 15 kW installations), there is a significant trend towards small commercial and larger installations.

**The challenges of diversification and proliferation**

One of the key issues for PV installers has been the diversification of their portfolios. On the one hand, installers have been offering a broader range of technologies to their customers. As the significant increase of electricity prices in the UK warranted the inclusion of storage solutions, more and more installers now also offer electric mobility solutions (73 %); furthermore, around a third of all surveyed installers have already included heat pumps and smart home applications in their portfolio.

In addition, a lot of new component manufacturers have entered the market, so that installers can choose the perfect product for each installation. Long gone are the times where installers would offer a single module- or inverter brand exclusively. While in terms of modules the dominating Chinese manufacturers (such as JA Solar, Jinko Solar, LONGi Solar and more) are ever present in all European markets, the inverter manufacturer landscape in the UK is significantly different. In most of the markets EUPD Research covers, inverter brands such as SMA, Fronius and



Huawei dominate, while in the UK manufacturers such as SolarEdge, Solis, Enphase and SolaX are among the most popular choices.

Last, but not least, when looking for new brands and products, British installers trust their wholesalers and distributors for reliable information (62 %). So when trying to increase your portfolio, reach out to your valued partners such as Segen, Midsummer Energy and more, or visit [www.eupd-research.com](http://www.eupd-research.com) and speak to our team of experienced market researchers, as we will be happy to provide you with relevant information.

Best of luck and keep up the good work.

***Attend Saif's presentation for additional valuable insights to help you gain a deeper understanding of the PV market***

# Battery storage: the key to holistic home energy efficiency

**R**OB Taylor is Chief Information Officer at GivEnergy, a company specialising in home energy storage. Rob's mission is to empower energy freedom for all, through the implementation of new technologies to democratise and simplify distributed energy resources. Here Rob talks about the key role for battery storage in delivering an efficient energy ecosystem.

For too long, home energy efficiency has been viewed as a series of device silos.

Homebuilders have checked off cursory lists including measures like insulation and double glazing. Renewables installers have primarily focused on solar PV – hopefully with supporting battery storage in tow.

Today, smart energy devices are causing a clean energy convergence. No longer is solar a silo, or solar paired with storage seen as an end-point.

Instead, the modern home comprises an

ecosystem of smart technologies that are starting to work together to integrate, automate and optimise the customer's energy usage. In the future, this convergence will only deepen as bill payer demands and regulations move towards a holistic view of home energy efficiency.

## The modern smart device mix

### Battery storage system

The ability to store energy sits at the heart of any energy-efficient ecosystem. Customers can store cheap, clean energy in their battery – then discharge it at the right time to run devices in their home ecosystem. Doing this locally in a distributed manner instead of (or as well as) at grid scale offers big benefits in infrastructure planning and costs.

### Air source heat pumps (ASHPs)

While ASHPs don't directly emit carbon, they must run on clean electricity in order to avoid a

hidden environmental cost. Integrating an ASHP into a smart ecosystem with a home battery, solar, etc. means customers can heat their home using the cleanest (and cheapest) possible power.

### EV chargers

Similarly to ASHPs, EVs must be charged sustainably to be truly carbon-free in use. EV chargers with smart functions enable customers to charge from clean energy stored in a battery, directly from solar, or from the grid when clean energy is in abundance.

### Smart plugs and smart meters

Monitoring energy consumption is crucial to creating a truly energy efficient ecosystem. To this end, customers can monitor overall energy consumption via a smart meter, as well as consumption of individual devices via smart plugs. This knowledge can drive more efficient use of energy within the home.



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**Energy management apps**

Smart energy apps offer customers the convenience of controlling their energy ecosystem from one interface. Open integrations increasingly allow the billpayer a single, centralised view of their energy use and smart energy devices.

In short, the days of insulation and solar panels acting as the be-all and end-all for an energy efficient home are long since passed. Modern standards of energy efficiency depend on a holistic mix of technologies interacting together – of which smart storage batteries are the enabling centrepiece that enable the home to reliably access clean and cheap energy.

**Interoperability: the key to holistic energy efficiency**

It's clear that modern energy ecosystems require the integration of multiple sets of hardware and software to perform to their full potential. The problem is that not all hardware and software are mutually compatible.

For example, customers might not be able to integrate certain home battery brands with certain EV charger brands. Smart control from Brand A might not talk to or interact with device from Brand B.

This is a problem of interoperability – the capability of products, devices and applications to connect, communicate and provide services in a coordinated manner. Manufacturers are often disincentivised to make smart home products interoperable due to:

- **Cybersecurity challenges**
- **Existing market and lock-in advantages**
- **Added development costs**

However, interoperability and open standards

are essential for enabling the wider benefits of smart energy. For instance, if a customer wanted to upgrade or retrofit part of their home energy ecosystem, interoperability gives them access to a wider choice of potentially more cost-effective devices.

In the long-term, this helps customers avoid being 'locked-in' by a particular brand or provider. If we want more homes across the UK to adopt clean energy technologies, we need to make that adoption simple, understandable, accessible, and low risk.

**How smart home energy ecosystems can support the grid**

The adoption of energy efficient ecosystems in the modern home should also be viewed through a broader lens: power supply. Our electricity grid is increasingly reliant on time-variable and intermittent sources of energy. Grid operators are pushing to become smarter in how they balance electricity supply and demand.

Grid flexibility involves operators calling upon distributed energy resources (DERs) to support the grid, as and when required. For instance, operators can incentivise homes with battery storage to export power to the grid when overall demand is high or charge at reduced or negative cost when supply exceeds demand (for example, a very windy evening).

With a network of thousands of home batteries able to buffer local and national grids under duress, our power network is not only less reliant on burning fossil fuels, but also made more stable.

Grid flexibility schemes have the additional advantage of monetisation for the billpayer. Generating a revenue from billpayer's battery

assets will only drive further adoption of clean energy tech, whilst also potentially reducing its financial initial entry barriers.

Of course, given the numbers involved, all of this grid participation must be done in a secure manner. Standards and protections will need to be enacted to ensure that companies are providing these products and services in a robust, transparent, and secure manner. Customer devices and data must be secure and pose no risk to the wider grid.

**Working towards an integrated network of energy efficient ecosystems**

Home energy efficiency is no longer a series of device siloes or isolated policy measures. Instead, creating an energy efficient home involves a holistic approach, including integrated sets of hardware and software.

Home battery storage – affording energy customers the ability to store cheap, clean energy – is at the heart of powering energy efficient homes. And on a macro level, battery-powered homes can help provide grid flexibility and resilience amidst time-variable sources of energy.

Challenges remain when it comes to building energy efficient ecosystems, including interoperability and cybersecurity. Through cross-industry collaboration, these challenges can be overcome and a holistic approach to home energy efficiency can become the new normal.

***You can attend Rob's presentation at S&S Live for additional valuable insights into the role for smart energy devices in our future grid.***

# Integrating solutions: putting the jigsaw together



**In line with one of the focus areas of conference content at Solar & Storage Live Birmingham, we consider the importance of a 'whole house' approach to sustainable living and where EV fits into connected solutions.**

Randal Smith – EV and EV Charging Solutions Consulting – considers the opportunity afforded by the expansion in EV charge point installs and their place in integrated solutions.

## Why EVs and how do they impact installers?

Electric Vehicles (EVs) have been around for nearly 200 years, but have only really come to the fore in the last 10-15 years.

Why is that so?

Well in the last 10-15 years, there has been growing realisation of the impact that the harmful emissions from burning fossil fuels is having on our climate and our health. Indeed, when you drill into the detail for the UK, around 29% of Greenhouse Gas (GHG) emissions come from transport, which is the largest emitting sector for GHGs in the UK. Drilling into that sector, reveals that around 80% of it comes from cars, typically burning petrol and diesel as their fuel of choice, creating those harmful emissions.

Hence, we see the Government initiatives to try to move people away from fossil fuel usage in transport towards alternative energy solutions, such as EV, hydrogen, bio-fuels etc. Currently, EV is winning that race, and thus we see the Government ban on the sale of new petrol and diesel cars coming into effect in 2035 in the UK, encouraging people to move towards EVs.

EV numbers are increasing exponentially, as more people step into the EV arena and realise the benefits that they can bring. Indeed, the best-selling car in the world in 2023, across petrol,

diesel and EV, was an EV – a Tesla Model Y – and EVs are now outselling diesel cars in the UK market, increasing market share each month.

So, with this rapid growth of EVs, we also need to establish an EV charging network to support these vehicles, which is where EV chargers come in, and the increasing need for the installers who possess the skills and knowledge to install them.

Around 60% of homes in the UK have off-street parking which may be suitable for a home EV charger, and around 90% of EV owners will go this route for their charging needs. Choosing the right energy tariff with a low nighttime rate, they could achieve low pure running costs, travelling 40 miles in their EV for as little as 70p. Compare that to something like a diesel car where doing the same distance could cost you around £6.50.

## Reducing energy costs through increased efficiency

In June 2022, the UK Government established a new regulation that stated that all new build homes and buildings in England were legally required to have EV charging points, whether residential or commercial, as part of the Part S building regulations, but only if they have an associated parking space.

In parallel, recent, and ongoing, geopolitical events have shown how easily energy prices in the UK can be impacted, as we saw recently, with the war in Ukraine driving up UK energy costs.

As a result, property owners have started to focus on making their homes and businesses more energy efficient with better sustainability – effectively a whole house approach.

Whilst EV charging is one part of that efficiency and sustainability equation, we are also seeing increasing numbers of people installing PV solar panels and battery storage. By linking all three together you can create a highly efficient energy

system, where the costs of driving an EV can be reduced further, potentially even achieving free running costs if sufficient solar energy can be generated.

Whether a property is new or old, taking a whole house approach to sustainability and efficiency makes sense, and with the rise in the demand for connected solutions with EV chargers, PV solar and battery storage as people look for more sustainable and energy efficient solutions for their everyday lives, the demand for installers with the knowledge and skills to install such systems will increase.

So if you are an installer of such technology, or are looking for a growing sustainable industry with rapid growth to get involved with, EV charging, coupled with PV solar panels and battery storage is the next big industry to get into.

Following a long career in the RAF, Randal Smith was the PM for the Jaguar I-Pace, the first fully EV from Jaguar Land Rover, with the car going on to win 90 international awards and World Car of the Year in 2019. He has built companies up, and led the installation of numerous EV charging networks nationwide across the public and private arenas, operating in various company C-Suite and board level positions. Randal is also a speaker at various EV and Energy shows, conferences and webinars, and is regarded as an expert in the field of EV, EV Charging and Batteries. He now runs his own Consultancy – EV and EV Charging Solutions Consulting.

**You can attend Randal's presentation at S&S Live for additional valuable insights into the role for EV in delivering integrated sustainable solutions.**





## Industry Voice: **Reaching the tipping point**

**A** **NOTHER focus area of conference content at Solar & Storage Live Birmingham, is a look at what is needed from government to address market challenges and consumer inertia to reach a tipping point in renewable solution uptake.**

Here Bean Beanland, Director for Growth & External Affairs, Heat Pump Federation, an industry coalition that lobbies government for long term policy to support UK heat pump deployments, shares his thoughts on: Encouraging and engaging consumers: What does the new government need to do?

The last week in June may have marked a seminal moment for the domestic heat pump sector in the UK. As InstallerSHOW drew to an end, and following the second 1st Million Heat Pumps Unconference that preceded it, there was a very strong sense that the industry had made some sort of fundamental decision. Heat was going to be decarbonised, come what may. The scale of InstallerSHOW had been a step up on 2023. The investment by manufacturers, and the broader supply chain, in bigger stands was clear to see. The buzz was further reflected in the announcement from the organisers that a third Hall at the NEC would be added for 2025. But is sector buoyancy enough?

The industry can achieve a great deal, but it needs proactive and willing assistance from a government that believes in the same goal, and one that is prepared to demonstrate the same through leadership from the very top, and actions from Ministries, many of which have been anticipated for years. There's an optimism that the new government will advance domestic decarbonisation. The first weeks since the election have seen very significant macro-

energy announcements on GB Energy, onshore wind, offshore wind, solar and the appointment of the talismanic Chris Stark. The heat pump industry now looks to government for the equivalent at domestic scale, on the price of electricity, reform of Permitted Development Rights (PDR) and a can-do attitude, to boost consumer confidence by taking on the perceived barriers to a successful transition away from fossil fuels.

What does this mean? The consultation on electricity pricing was close to publication prior to the election, so could be tweaked by Ed Miliband and released pretty quickly. The consultation on PDR closed in April, so analysis, and the drafting of the responses, should be well advanced. Bringing both rapidly to the table would provide a clear indication of intent. If No.10 and No.11 support these actions with positive messaging – it can be done; we can make it affordable; it will improve the lived experience; it is the long term solution to domestic energy costs and security; the grid will cope; we'll train the workforce; there is a health dividend; decarbonisation can reduce fuel poverty – then installers can respond to consumer doubt and confusion.

### **Confident customers will become consumers**

This isn't to say that these things are easy, but they all have to start with the political will to want to succeed. If this is the backdrop, then the industry and finance sectors can start to invest with confidence and the messaging will change. Confidence is contagious, and will rub off on consumers, especially as new funding models and propositions are brought to the market. Lower electricity costs, flexible tariffs, combining heat pumps with solar PV and batteries, plus

fully financed solutions will bring affordability. Describing the improvement to the home heating experience is a challenge, but initiatives such as Nesta's Visit a Heat Pump, will bring this to life. Reducing dependence on imported gas improves fuel security and the UK's balance of payments. Grid infrastructure investment is coming, £28bn in ED2 and, just this week, OFGEM approval for a new sub-sea cable.

With political will as the enabler, removing many of the bigger policy and affordability barriers, it comes down to practicality for homeowners and landlords. Is the transition disruptive? Even this is a reducing problem. Latest research, based on gas boiler data, suggests that deployment of high temperature heat pumps results in many homes not requiring any radiator changes, allowing consumers to decarbonise as their boilers reach end of life, and then to continue to improve energy efficiency at a pace that suits them. Innovation is resulting in quieter devices and is likely to resolve the issues around hot water storage. Affordable solutions will encourage proactive transitions, so reducing the impact of the distress purchase, which so often supports a retention of the fossil fuel status quo.

So, what is needed from government? The attitude and the will to drive change. If these are highly visible, and result in the policy development that is required, installers and the electricity sector as a whole can instil confidence in consumers, and confident consumers will become customers.

***You can attend Bean's presentation at S&S Live, to hear additional valuable insights into what is needed from the new government to encourage and engage with consumers.***



# Don't miss the UK's first ever European Solar Games!

**F**OLLOWING great success in the Netherlands, the event is expanding to other European countries, with Solar & Storage Live in Birmingham the stage for the UK's first-ever European Solar Games.

An exciting competition in which the best solar installers compete against each other, the championships are primarily intended to raise awareness of safe and high-quality installation.

For the three days of Solar & Storage Live, installers will battle for the Golden Roof Hook. But how exactly does this battle work? What are the teams judged on, and why is this competition so important for the solar sector?

Anne Brandt, Training & Exhibition Manager Europe at Esdec, is one of the people closely involved in organising the European Solar Games and tells us all about this spectacular event.

## Showcasing solar installations

The UK is the fourth country to be introduced to the European Solar Games. The event's origin lies in the Netherlands, where it has enjoyed great popularity for several years, exactly what Esdec, supplier of innovative PV mounting systems, hoped for when they came up with the concept in 2019. Esdec was looking for an appealing way to showcase solar mounting installations at trade events and to enable distribution partners to involve their customers – the installers – and this competition format achieved both. In 2023, we expanded to Belgium and Germany, now we are in the UK for the first time, and next year we plan to add France to the list.

## Spotlight on the installer

The event itself is great fun, but the underlying ambition of the games has a more serious angle too, with a strong focus on the quality and safety of the installation – both aspects which Esdec attaches great importance to. It offers solar professionals a unique opportunity to show their skills under the

supervision of the jury and an excited audience. Usually on their own when installing panels, now all the spotlights are on them. This creates a level of nervousness but, despite this, participants are, without exception, highly enthusiastic about the competition.

## Entertainment value

Hosting the European Solar Games during an exhibition has proved extremely popular. As visitors walk around the exhibition, interacting with the stands and their peers, the event offers a little extra. You will find installers enjoying watching their peers with a critical eye, commenting on what they would do differently, and it is also a great opportunity for sales staff and other office colleagues to see how things really work on the roof.

## Huge business boost

For all those involved with the European Solar Games, it is a great opportunity to showcase their company and boost awareness and engagement. One of the previous winners worked at a small installation company with very little marketing activity, and the publicity they received before, during and after the European Solar Games resulted in a significant growth in orders.

The sponsors enjoy the same boost for their brand: their company and products are constantly showcased to the entire sector and, by aligning their brand with the competition's focus on quality and safety, it enhances industry regard for their company.

## Rules and criteria

To ensure the required standards of quality and safety are upheld throughout the competition, the participating teams are judged by experienced solar experts. The judges are, literally, on top of things and award points based on various criteria. Although teams are given a maximum of one hour to install six solar panels – including inverters and cabling – the finishing time is only crucial when there's a

tie in points. Most points are awarded to installers working professionally and safely on the roofs with the result evaluated qualitatively. Broadly speaking, the rules and criteria are the same for each country, but always with consideration for adjustments needed on a country-specific level.

## Master of Ceremony

For installers in the audience, it is undoubtedly clear what they are looking at, but it may not be so to others. To involve everyone in what is happening, and add insight into the profession of an installer, a master of ceremony is always present. The explanations are, of course, always accompanied with great entertainment value to encourage the audience to be even more fanatical in cheering on their favourite team.

The mutual sportsmanship is great, but in the end, of course, every duo wants to win the Golden Roof Hook and become Champion of the European Solar Games.

## Future ambitions

As already briefly mentioned, we are already looking at expansion into France and, ideally, more countries in Europe will follow. In the future, the big dream is to bring together winners from all the different countries to compete together for the major European title.

As was our hope when we launched the event in 2019, the European Solar Games make a great contribution to a positive image of the solar sector. Esdec – an Enstall company – is very happy to have Solar & Storage Live as organising partner and are grateful to all other stakeholders who are contributing to this very first edition in the UK.

Our special thanks go to the sponsors of the inaugural UK event: Solar & Storage Birmingham (Terrapinn), Segen, CableWorld, OpusFlow and Solaredge.

**You can learn more:** <https://europeansolargames.com/en/edition-united-kingdom/>

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# The latest in home energy management from **EcoFlow**



## **E**COFLOW unveils innovative Home Energy Ecosystem and PowerOcean Plus solar battery system at Solar & Storage Live

At this year's Solar & Storage Live event, EcoFlow, a prominent name in portable power and renewable energy solutions, unveiled its latest advancements in home energy management.

The company's new EcoFlow Home Energy Ecosystem, and the powerful PowerOcean Plus three-phase solar battery system, mark a significant leap forward in energy efficiency and integration, offering homeowners unprecedented control and savings.

### **Introducing the EcoFlow Home Energy Ecosystem**

EcoFlow's new Home Energy Ecosystem is designed to streamline and enhance the way homeowners manage their energy. This all-encompassing system integrates a range of products, including the innovative PowerOcean solar storage battery systems, PowerHeat and PowerGlow heating solutions, the PowerPulse EV Charger, and various smart home devices like thermostats and plugs.

The system is controlled via the EcoFlow App, which will soon be upgraded with several new features to aid in energy management. These

include the Solar Energy Predictor, which will forecast solar energy availability in real-time, and the Energy Command tool, which will automate system adjustments based on current energy conditions. Additionally, the Dynamic Tariff Dashboard currently integrates with different providers' pricing algorithms to help users take advantage of fluctuating energy rates, maximising savings.

### **PowerOcean Plus: addressing demand for advanced energy**

The PowerOcean Plus three-phase solar battery system is at the forefront of EcoFlow's advanced home energy solutions, with its key innovation centred around its hybrid inverter.

Delivering 29.9kW AC output, this hybrid inverter supports complex and expansive rooftop solar configurations, accommodating up to four PV strings with a maximum of 40kW DC input, ensuring optimal energy conversion from sunlight.

A notable feature of the hybrid inverter is the built-in Current Transformer (CT), which simplifies the installation process by eliminating the need for a separate smart meter, reducing installation time by up to 50 minutes. A single hybrid inverter supports a scalable battery capacity of up to 60kWh,

making it adaptable to various energy storage needs.

The advanced battery pack safety features – including a fire prevention module, an IP65-certified aluminium casing, and a sophisticated Battery Management System (BMS) – set a new standard for safety and performance in the residential energy storage industry.

### **Comprehensive support for installers**

EcoFlow has also prioritised support for installers with a 15-year warranty on PowerOcean LFP batteries and the EcoFlow Pro App, which streamlines the installation process and enhances diagnostic capabilities. The company offers comprehensive after-sales support, including a 12-hour hotline and personalised one-on-one assistance.

The EcoFlow Home Energy Ecosystem is currently available, with PowerOcean Plus, PowerHeat and PowerGlow heating solutions, and PowerPulse EV Charger ready for preorders from October 2024.

**Please visit EcoFlow at Solar & Storage Live on 24-26th September at Hall 19, C10. And for more information, please visit <https://homebattery.ecoflow.com/uk>**



# The 'big four' of retrofit

## and why it's like a pair of Spanx



**YOU'LL often read about the importance of 'fabric first' in a retrofit project, but knowing where to start can be overwhelming. Judith Leary-Joyce went on a huge learning journey during her own home retrofit project and has now written a book to help others get ahead on the road to a more energy-efficient home. This article has been written based on an interview with Judith and excerpts from her book, the *Beginner's Guide to Eco Renovation*.**

"Retrofit is to building what Spanx is to a little black dress. If you've got the underpinnings right, it's fabulous, yet no-one really wants to know much about the underpinnings."

It's an interesting analogy presented by 75-year-old grandma, Judith Leary-Joyce, who has become affectionately known as the 'Queen of Insulation' in her hometown of St Albans.

When Judith embarked on a huge retrofit project of her leaky and cold Victorian terrace four years ago, little did she know it would lead to her writing a book, giving a Tedx Talk, and becoming a social media sensation, racking up an incredible 60,000 followers and 19 million views on Instagram.

A self-confessed 'eco-worrier', Judith has been

championing the climate since the 1970s, having joined Friends of the Earth when it was first formed. She's studied deep ecology, marched for the environment, shaken tins to raise funds, ditched plastic where possible and eats vegan food.

So when Judith and husband John (70) decided to rip down their draughty too hot, too cold conservatory and replace it with a new rear extension, it was only ever going to be an eco-friendly build.

### The extension

The starting point for the extension which is 7.5 x 2.2 metres (internal measurements) was an air source heat pump (ASHP). John had been watching their progress for a long time and knew he wanted one.

Their architect advised that good insulation was key to support the ASHP and recommended using a breathable membrane across the walls, building a stud frame to hold the insulation, putting 80mm of wood fibre insulation batts (Pavaflex) into each gap in the framework and covering this with rigid 40mm boards of Isolair – the wood equivalent of plasterboard.

But it wasn't long before the big realisation came; however well the extension was prepared for the ASHP, the heat would quickly be lost

through the rest of the leaky old end-terrace.

The couple decided they would have to retrofit their way back through the entire house, although at that point, they didn't even know it was called retrofitting.

### The retrofit

Judith threw herself into the project from day one.

"I was hooked straight away," Judith said. "I was up until 2am researching that very first day. I was grappling with dense and convoluted information, talking to experts about topics I didn't even know existed, but back then, we didn't know what we didn't know."

"It was the day I discovered the word 'retrofit' though, as opposed to renovation, that everything changed."

One of the main points of learning was about how 'the big four' – insulation, air tightness, ventilation and breathability – all work together, and this became the foundation of the retrofit project.

"If you insulate without airtightness, you'll be disappointed. Insulation won't stop the draughts so you'll still feel chilly. If you insulate and get airtight, but don't ventilate, the air will feel stale and you'll invite condensation and maybe mould."

"If you live in an old house, leaving breathability out of the equation will also promote



condensation and mould.”

So while in some respects they were able to carry on as they'd started in the extension, there were many elements of the old building that required a more creative approach.

## Insulation

This became something of an obsession for Judith as the first piece in the 'big four' puzzle. Yet in a solid-wall Victorian property with one big unprotected wall, this was no mean feat. As well as single brick walls, there were suspended timber floors, single glazed windows and large chimney shafts to contend with.

Just as with the extension, Judith and John preferred not to use the most common insulation, PIR, because it's made from petrochemical substances, releases emissions during production and creates hazardous waste at the end of its life.

While they had to use it in a couple of areas, they opted in the main for the wood fibre insulation approach which they'd used in the extension.

Wood fibre is robust, flexible and recyclable. It comes in soft batts and can be tightly packed into floors, roofs and walls.

They did some of this work themselves and became adept at putting the jigsaw together, leaving no gap unstuffed.

Particular attention was paid to thermal bridges – areas that conduct heat more easily than surrounding materials – and U values which indicate how effective insulation will be based on heat lost.

There was one area which didn't allow for the wood frame insulation system – the Victorian bay window. It remained a challenge for a long time, until Judith found an environmental architect who told her about Diathonite – a thermal plaster which can be used on corners and angles.

The old lime plaster first had to be removed to bare brick and a deeper frame built to accommodate the increased wall depth. Specialist plasterers trowelled the Diathonite on in three layers.

In the loft, 100mm thickness of sheep's wool was used with wooden board underneath to allow for storage, with 50mm of Pavatherm and 40mm of Isolair between and below the rafters.

After the house had been packed as tight as possible, Judith and John even went to the trouble of borrowing a thermal imaging camera from the council to check their handiwork. As well as highlighting cold spots, they used the images to show the window installers cold gaps between the door frame and the wall. They were then able to identify and rectify a faulty latch that had pinged off the sash.

## Airtightness

Drafts can quickly leak away 20% of heat generated – something Judith was keen to avoid. In a new build, this can be prevented with a vapour control membrane, but going back through an old house is much more challenging.

It meant forensically examining every nook and cranny for gaps, such as around utility pipes, and holes in the fabric, chimneys, fireplaces, walls and doors. Then sealing them up with insulation (in big spaces such as under the sink and kitchen cupboards), tape (for example sealing gaps between the walls and floor) and expandable foam (as an environmental last resort).

Triple-glazed windows and doors were chosen, which have to be fitted properly to achieve maximum airtightness.

Judith shares an example, in her book, of how a mistake in the fitting of the windows jeopardised airtightness.

As for the chimneys, they took one out altogether. While this was one major source of draught gone for good, another was kept as the couple love a fire, but it remains something they are grappling with.

Same as with the insulation, Judith and John checked their work with an airtightness test, which basically involves putting a huge fan in a doorway to suck air in to reveal any holes or gaps.

“This was such an eye opener, I'm so pleased we did it,” said Judith. “We found drafts all over the place that we didn't know about. Even where the original sash windows had been refurbished there was air coming up through the rope hole.

“We also needed to seal between the front room floorboards. In fact, we put an additional airtight membrane over the floor to make sure we'd caught them all.”

## Breathability

The breathability part of the equation meant dealing with moisture in the air caused by both internal and external sources. When any warm air lands on a cold surface, it condenses, risking damp and mould. In her book, Judith includes the statistic that the average family can produce up to 15 litres of water vapour in one day just through normal activities.

Yet with all that work done to make the house airtight, there's no easy escape for moisture-laden air.

Old houses are more breathable by design due to the use of materials such as stone, brick and earth or lime-based mortars, combined with a lack of airtightness. But once you try to make them more efficient, moisture becomes an issue.

As wood fibre is a breathable material, it needed to be covered with lime plaster, which is also breathable. While Judith found it tricky to find a lime plasterer, techniques have already moved on to make this process easier now.

It was all finished off with breathable paint.

## Ventilation

The house is warm and well insulated, it's breathable and all gaps are removed. But now the air flow is removed and there's the water vapour to manage. Judith and John wanted to take control of the air circulation in their home.

They opted for six single-room heat recovery ventilation fans which consistently move air in and out of rooms. They're left on 24/7 and have variable speeds that change according to the humidity. The heat recovery option means up to 95% of the heat in a room is passed from the outgoing warm air pipe to the incoming cold air pipe to bring warm, fresh air into a room.

Judith writes: “It was one of those fortuitous internet searches. We knew we needed ventilation and we knew about mechanical ventilation heat recovery. It sounded fantastic, but there was no way it would fit into our old house. So I had to get on the case and find something that would work. Eventually I came across a single-room heat recovery extractor fan. It was so exciting!”

They opted for Envirovents with a Blauberg in the bathroom which has an adjustable humidity sensor.



## The renewables

The air source heat pump was the catalyst for the entire project. Judith and John chose the Mitsubishi 8.5kWh heat pump which is mounted on the flat roof of the new extension.

Despite being initially concerned about noise, Judith says other than a 'gentle thrum' on bitterly cold days, she mostly doesn't notice it all, whether inside or outside.

The heat pump has been paired with a combination of radiators and underfloor heating. Underfloor heating in the dining room and kitchen/family room where there's wooden flooring, and radiators in the front room and upstairs where there's carpet.

Because they were concerned whether they would be warm enough, they chose larger radiators and kept an existing radiator in the dining room in addition to the underfloor heating.

Now with the benefit of hindsight, they feel this was probably 'overkill' as they only use one of the radiators and only intermittently.

To maximise their power generation, Judith and John paired their heat pump with solar panels. Not blessed with a south-facing roof, they have five panels facing east and three facing west. The 10 JA Solar 440 mono / all black panels fitted with a GivEnergy 3.6kW hybrid inverter achieve around 75% of an average south-facing output.

## The result

The Leary-Joyces have reduced their annual energy consumption, and their bills, by an impressive 75%, down from 25,500 kWh per year to less than 6000.

Their house has been valued at an additional £90,000 and upgraded from an energy performance certificate rating D to B.

The couple are more comfortable, considerably warmer, and feeling incredibly happy about the legacy they are leaving.

"We need to accept that our homes are part of the problem. This is one piece of climate action that has no sacrifice, you can only win. Around 21% of UK emissions come from leaky homes, so if everyone could get working on their houses, whether a deep or shallow retrofit, we could make a big dent in those emissions."

## The part the installer can play

Judith said: "Conversations with builders are generally top down. They tell you what you need and we go along with it because we want the difficult bit to be over.

"They may have done their job a particular way for a long time and might not be interested in changing or learning.

"As consumers we have to take our place in the process and make it clear that sustainability and retrofit are driving our buying decisions. If we use that buying power, they'll soon come on board.

"You'll end up with an energy efficient home that you understand because you helped to create it. You will have saved money and left a legacy.

"Another way I think the profession can really help is to discuss retrofit and its benefits with their customers when they're already working on their properties, perhaps for a loft conversion or an extension. Because if you're already spending tens of thousands on an extension, as we were, then suddenly an extra £23,000 to retrofit the rest of your house doesn't seem so much.

"We looked for local installers and tried to find one that we didn't feel was overselling us. We also wanted someone who was prepared to get to know the situation because it's a quirky house and we are quirky people. They needed to understand that the environment was our major driver. Climate was first.

"If that meant giving up on a new sofa or something to get a better heat pump, then so be it."

## Writing the book

One hugely unexpected outcome of the project was how it's led to a whole new life chapter for Judith, now author of a book that has so far sold 1,500 copies on Amazon.

"A lot of people were interested in what we had done and the savings we've made. They often said they'd love to do it themselves but wouldn't have the time, money or knowledge. So I decided to write a book that is simple to understand, which I think is the benefit of it being written by someone like me, rather than a professional.

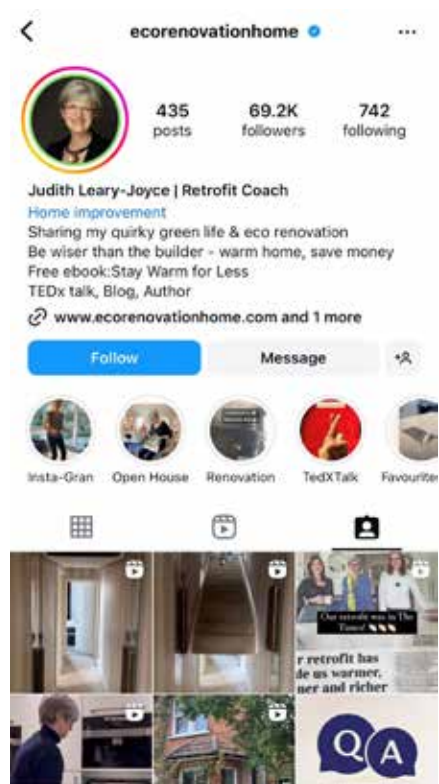
"I've interviewed the professionals and broken down the answers to my questions in a way that people can understand."

## The Social media phenomenon

Then came the social media stardom.

"I'd been doing the odd bit of social media, but when I did the Tedx Talk I started thinking I should get better at it. So I started posting the odd reel on Instagram, I filmed a dishwasher life hack and was sitting watching a movie when the notifications started coming through, bing, bing, bing, and it just went off like a rocket.

"I'm now doing a course on editing and learning about Pinterest and YouTube. I'm writing



my blog and giving talks – I'm meant to be retired! The fact all this has happened has been the biggest surprise.

"I mean, whoever thought that at 75 years old I was going to sit and talk about insulation and say, 'wow, that was really interesting'"

## What's next?

Far from finally putting their feet up, Judith and John have now embarked on a barn build for a home office in their garden. They're hoping this will be completely self-sufficient with 10 solar panels and a storage battery which will also connect to the house.

They won't be resting on the awareness-raising front either.

"I know how difficult it is to look the climate crisis in the eye and I'll talk to anyone who listens about this," Judith said.

"I managed my fear by going from eco worrier to warrior, looking at how I can make a difference."

But what's motivating them to keep going long after the dust has settled on their home retrofit?

"It's creating a better life for our grandchildren," Judith said. "My youngest grandson is seven and I have this image of him. I want him to die an old man in his bed surrounded by loved ones. I need to think I've done everything I could to provide them with a safe life."

You can follow Judith's barn journey, and get various environmentally-friendly life hacks on Instagram at @ecorenovationhome.

**Have you completed an energy efficient building project or retrofit? We'd love to hear about it. Please get in touch by emailing [news@renewableenergyinstaller.co.uk](mailto:news@renewableenergyinstaller.co.uk).**

# Soleco anti-vibration kits for heat pump insulation

**In recent years, sales of heat pump air conditioners have increased exponentially as they are used both to cool and heat environments, not only in periods of extreme heat or cold, but also in the intermediate months.**

One aspect of the technology that has been given far more column inches in mass media than it merits, is the issue of operational noise.

Despite the hard-to-dispel myths, heat pumps are typically quieter than fossil fuel boilers. While the noise level of a heat pump depends on the type, and how hard it's working, air source heat pumps typically produce between 40 - 60 decibels of noise. Similar to that of a dishwasher or microwave, this can be considered a low to average level of noise.

It's also worth noting that any fans present tend to be relatively quiet compared to traditional heating systems, such as boilers or furnaces. With appropriate installation and maintenance, there is no reason why systems should cause excessive disturbance.

## Heat pump noise

While heat pumps are, generally, quiet, they don't operate in complete silence. As with any mechanical system, heat pumps do produce some noise, but excessive operational noise is usually an indication of something amiss – either with the machine or its installation.

Modern heat pump systems are designed to operate quietly. You will usually only hear a low whirring noise coming from them which is caused by the fan pulling in warm air into the compressor.

A heat pump will naturally produce low level humming due to the fan, but any loud or unusual noises should be checked out as they may indicate a problem such as damaged piping, vibrations due to improper or unsuitable mounting or rattling sounds suggesting loose or dirty parts.

## Picking up bad vibrations...

A more notable problem with these machines is related to any vibrations generated, which can, in addition to creating noise, reduce their life cycle.

Loud heat pump vibration is typically caused when the machine's low-level vibrations transfer into the structure they are mounted on, creating an amplification effect.

The vibrations generated by machinery installed in residential buildings or workplaces can be a source of disturbance and significantly reduce people's well-being. The UNI 9614 standard sets precise limits on the acceptable values of these vibrations depending on the types of rooms and buildings. In particular, the following uses are



identified: critical areas, homes, offices and factories.

## Delivering good vibrations

Soleco is an Italian manufacturer passionate about overcoming increasingly complex challenges. The company has a wide range of standard products that, thanks to the flexibility of their design and manufacturing processes, can be customised to any needs.

Soleco's range of products is made for the renewable energy, construction industrial, nuclear, marine, healthcare, food and railway sectors. With a laboratory that performs static tests on their products, they are also supported by recognised laboratories to obtain seismic certifications such as UBC 1997 and IBC 2009-2012 (ASCE 7-10, AC156). Their anti-vibration mounts can be used to solve vibration problems in air handling units, chillers, generators, pumps, solar panels, etc.

Having been producing anti-vibration devices for vibration isolation for 50 years, Soleco has created anti-vibration feet kits for heat pumps that, in addition to isolating vibrations and reducing the noise generated by the machine, extend the unit life.

The types of products dedicated to this sector are divided into two categories: anti-vibration feet with internal spring – the MNA series – and anti-vibration feet in thermoplastic elastomer – the NOCE series.

The anti-vibration feet kits, sold through distributors, are divided by color depending on the load of the machine to be isolated. They are supplied in convenient blisters, complete with screws and assembly instructions, for practical ease during installation.

Unlike the rubber feet more commonly seen in the market, Soleco feet are made of thermoplastic elastomer, a material that resists extreme temperatures and external agents.

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# Introducing Bosch's first range of non-domestic 100% hydrogen boilers

**P**ETE Mills, Commercial Technical Operations Manager at Bosch Commercial & Industrial, gives the background on the company's Uni Condens 8000 F.

I'm delighted to introduce the first range of non-domestic fully CE certified high-efficiency condensing gas boilers that can run on 100% hydrogen gas. This represents a first for the UK and is intended to help support early adopter projects to simplify this part of the design.

But it hasn't been a quick-and-easy journey, we knew we needed to develop a range that would meet the needs of early hydrogen adopters, whilst being flexible for the current market and fuel options.

To do that, we needed the right partner...

## Bringing hydrogen experience to the market

We've been working in partnership with Dunphy Combustion, a UK-based manufacturer of high-quality burner technology, to develop a product offering that would meet the needs of early adopter projects. Dunphy has more than 25 years of experience with hydrogen combustion and is a globally trusted brand in this space.

Together with our high-efficiency condensing boiler technologies and hydrogen experience – particularly from being a key partner manufacturer in the UK Government's Hy4Heat project – we had the combined possibility to deliver a first-of-a-kind boiler to the UK and European markets.



The development test work that we undertook with Dunphy to verify the product range on both 100% hydrogen and 100% natural gas has been extensive. This represents a big step forward for applications wanting to decarbonise non-domestic heat demands through the use of green hydrogen.

## Fuel flexibility at the flick of a switch

From the outset, the UC 8000 F product range was designed to offer flexibility of fuel use as a key market requirement.

For pioneer projects with localised hydrogen production, we understand that hydrogen supply could be intermittent at times and that a backup is needed. Similarly, for projects that have their sights firmly on the future, it is known that there would still be a need to initially operate on natural gas for a time.

For these reasons we took the decision to give full flexibility by having two separate gas trains combined into a single burner head. Dunphy's innovative burner technology allowed for gas changeover to be controlled simply by operating a switch or through a Building Management System control. This level of flexibility without the need for onsite re-commissioning, is a big step forward for early adopter projects giving clients confidence that they will have a reliable supply of heat.

## The boiler itself

The UC 8000 F boiler range is a tried and tested stainless steel high-efficiency condensing boiler with an innovative three pass technology. The crimped tubes of the second and third pass through the heat exchanger create micro turbulences which keep the flue gases in contact with the heat exchanger surface ensuring good heat transfer.

The boiler water connections offer both a high-temperature and low-temperature return connection, giving the possibility to separate the system returns and gain further efficiency

Outputs range from 145kW to 640kW with the possibility to cascade boilers for larger outputs, with operating temperatures up to 90°C.

## Taking care of emissions

Hydrogen burns with a higher flame temperature than natural gas, potentially



# BOSCH

leading to higher NOx emissions. The UC 8000 F boilers use flue gas recirculation technology (FGR) built into the standard package to ensure low NOx emissions are achieved out of the box.

FGR operates to recirculate a small amount of the flue gases back into the burner. This lowers the flame bulk temperature and oxygen level, leading to lower NOx emissions. This technology reduces NOx emissions to below 40mg/kWh.

## But why choose hydrogen?

For applications where the electrification of heat would prove challenging, such as systems requiring higher temperatures, fast response or where there are no siting options for heat pumps, hydrogen may offer an alternative route to decarbonisation.

Whilst we wait for a decision in 2026 on the future of the national gas transmission system, local energy assessments may reveal hydrogen supply opportunities developing from the many hydrogen clusters benefitting from the Net Zero Hydrogen fund.

Put simply, where there is a potential hydrogen supply developing, realising a project of this sort just got a lot simpler.

**For more information, please visit:**

<https://www.bosch-industrial.com/gb/en/commercial-industrial/hydrogen-boiler.html>



# Retrofit:

## how installers can take the lead

**T**HE ongoing cost-of-living crisis, together with the high cost of energy, means millions of homeowners are finding it difficult to keep up with energy bills. While an increasing number are aware of the advantages energy efficiency improvements may bring, many fail to get projects off the ground because they are confused by misleading information. Nicola Kennedy, CEO of Heero Technologies, discusses how technology, and new apps in particular, can enable installers to accurately inform homeowners on the processes involved to quickly dispel retrofitting misconceptions.

### Getting the facts straight

A barrier for many seeking to make energy-efficiency improvements is that they struggle to make sense of the advice, government support and financing available for installing renewable solutions. The outcome, according to Energy UK, is that homeowners do nothing. Their report showed that more than two-thirds of homeowners made no energy efficiency improvements in 2023. When asked why, 35%

thought they wouldn't be able to afford the upfront costs, 11% were unsure whether the savings would make it a worthwhile investment and 8% considered the process too much trouble.

Energy UK's statistics clearly show that misconceptions around retrofitting play a key role in homeowner indecision. Many are of the opinion that energy efficiency improvements are expensive and disruptive and so, not worth the investment and effort. Additional research, this time conducted by Lloyds Banking Group, showed that a lack of knowledge was another factor holding back consumers from making retrofit decisions.

Aside from unfamiliarity with retrofitting terminology, much of the advice available can be misleading and, at times, contradictory. Articles and websites promoting one type of energy-efficiency improvement frequently exaggerate the negatives of alternative solutions, leaving homeowners confused about which, if any, they should choose.

Furthermore, with many sources of information being opinionated rather than unbiased, there are too many unsupported views about the grants or financial help available; the level of disruption that different solutions create; the types of properties

they are suitable for, and the energy efficiencies they can bring.

### The role for installers

Installers can not only play a crucial role in providing homeowners with a knowledgeable service and educating them about the true nature and value of the retrofitting process, they can also use these occasions to engage with customers about the suite of services they provide.

The first thing that homeowners need to understand is that every home is different. This means explaining the costs of buying and installing energy efficiency measures, also the energy savings they will deliver and how the nature of their property will have an impact on this. Discussing the suitability of different products for different homes can also better manage expectations regarding disruption caused by the retrofit process.

As guidance provided for a wide audience can only discuss matters in general, with access

to valuable information, installers can be at the forefront of the retrofitting revolution. They can convey their knowledge to the homeowner, to help them better understand the best solutions for their properties. Only armed with this information and the dedicated guidance from their chosen installer, will homeowners be able to make a truly informed decision and get projects underway.

Clear and up-to-date information about grants and other financial support is also essential. This shouldn't just cover the available financing options, but also eligibility criteria, terms and conditions and application deadlines. A problem for homeowners is that when they search online for financial support, there remains a lot of information about grants and funding schemes that are no longer available. As many of these web pages have not been updated, it is confusing and makes finding active schemes more challenging.

The good news is that help with financing is set to increase. The new Labour government wants all UK homes to have an EPC rating of C or above within the next decade, which means over 19 million homes will require energy efficiency retrofits. As part of this strategy, the government has ringfenced £6.6 billion of funding for its Warmer Homes Plan which aims to improve 5 million homes in the next five years. As a result,

grants and low-interest loans will be offered to install solutions like solar energy, insulation and low-carbon heating.

### A helping hand

New apps can play an invaluable role in providing installers with the personalised advice needed to educate homeowners about the suitability of different measures for retrofitting their homes. These apps provide accurate and clear information on the various retrofitting and energy effectiveness measures available, together with efficiency predictions and project recommendations that consider the actual property.

What's more, they offer up-to-date information on grants and financing opportunities as well as providing details about skilled, local and pre-qualified suppliers. What this means is all available

and relevant funding and grant information is available to view in seconds, in one place, allowing the installer to accurately determine options, with the homeowner.

Another issue that homeowners struggle with, is choosing the right companies to complete retrofitting projects. A quarter of householders say they need help finding tradespeople with the necessary skills, which is an understandable concern given that energy efficiency retrofits increasingly make use of newer technologies, techniques and materials.

As a knowledgeable source, installers can take the high ground and be recognised as providing professional advice and guidance for all stages of the retrofit process including, costs, products, energy savings achieved, environmental benefits, finance options and much more.





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In conversation with  
**Christophe Williams,**  
 CEO of Naked Energy

## Addressing the urgency of heat decarbonisation and the 'cold elephant in the room'



**B**RITISH solar heat and power scale-up, Naked Energy, has secured £17m of strategic and financial investment to supercharge the global roll-out of its cutting-edge solutions for the decarbonisation of heat.

The Series B funding round was led by E.ON Infrastructure Solutions and supported by co-investment from Barclays, through its Sustainable Impact Capital.

It means that Naked Energy, which has sold its unique high energy density solar technology to more than 20 countries, can now accelerate its growth even further.

We spoke to the company's CEO and co-founder, Christophe Williams, on what this means for the decarbonisation of heat, the barriers that remain in the journey to net zero, and the 'cold elephant in the room'.

"Heat is the cold elephant in the room," Christophe said. "For too long it's been overlooked. Because it's tough – it's boilers, furnaces and it's distributed throughout society – so it's been left in the long grass.

"Heat accounts for half of all energy consumed on the planet and is responsible for almost 40% of emissions, but there's not enough focus on decarbonising that heat," Christophe argues.

"It's such a narrow view that heat pumps are the only technology that will decarbonise heat. It is a fantastic solution and is getting better, but it's not a renewable technology and adds a load to the grid.

"Where the energy going to a heat pump is 100% renewable, that's great, but how will we produce all the energy that is needed for powering everything? We have the oldest grid in the world, and to upgrade that to deal with electrification will be a multi-decadal challenge. The new government wanting clean power by the end of this decade is going to be an enormous challenge."

### The Naked Energy solution

Naked Energy Ltd designs, develops and manufactures innovative hybrid PVT solar technology products.

Its Virtu range redefines solar energy. It's a hybrid solar collector that combines solar photovoltaic (PV) and solar thermal technology, to generate both electricity and heat from a single solar collector.

Unlike solar PV, which generates only electricity, Virtu performs at optimal efficiency by also capturing the sun's heat energy up to 75°C. The high-performance solar collectors generate heat up to 120°C, suitable for hot water or for pre-heat

and process heat in many industrial environments. It is ideal for settings such as hotels, leisure centres, universities, multi-dwelling properties and applications covering the lower range of industrial process heat.

Naked Energy's products generate more energy per square metre than any other solar technology – proven to be up to four times more impactful at offsetting CO2 emissions than conventional solar PV panels – making them ideal for high-energy consumers, especially those without the space for traditional solar panels.

The products dramatically reduce energy bills and carbon emissions and work seamlessly with other onsite solutions, enabling affordable clean energy transition.

### A target for solar thermal

Despite the huge potential for solar thermal, there are currently no targets for it in the UK.

"Europe is putting out a mandate through the Green Deal and solar thermal is recognised and

supported. There are currently 10 million systems already on rooftops in Europe and because every solar system has storage, there's also 185 GWh built in, all helping to balance the grid.

"But here there is no national target or policy support for solar thermal. Why not? We're just so far behind."

Naked Energy is one of the main sponsors of the Solar Heat Europe roadmap which is actively promoting the use of solar thermal technology for heating and cooling. The publication 'Energising Europe with Solar Heat – A Solar Thermal Roadmap' has been signed – by more than 100 entities and sponsors.

Naked Energy asserts that the UK should have a solar heat target and has set this at 11GW of solar thermal to be installed by 2030. This equates to 0.16kwh per person and matches the EU target. Countries like Germany, Denmark and Austria have already met or significantly exceeded this, while France, Sweden, Ireland and the UK are languishing far behind.

The UK currently stands at just 0.02kwh and would need to see 26% growth in solar thermal every year from now until 2030, across both residential and commercial.

While presenting these figures at last October's Solar and Storage Show, the company said the challenge 'isn't insurmountable'.

## Solving the heat decarbonisation challenge

We asked Christophe what he thinks is needed, in addition to a solar thermal target, to support the energy transition and achieve the UK's net zero targets; his wish list for the government, so to speak.

### These are his top three asks:

- Greater focus on heat decarbonisation rather than the electrification of everything
- Capital support and incentives for local manufacturing and supply
- Capital rebates for big companies

"The new GB Energy wants clean power by 2030, but it's not just about power. On the supply side we need to support local manufacturing and incentivise local supply. Businesses need access to capital to be able set up and scale factories, doing it through equity is very challenging.

"On the demand side, the commercial and industrial sector is overlooked. In Germany, for example, they have capital grants and if they install large solar heat systems, they can get a 25% rebate on the capital cost. UK governments have historically been against tariff-based systems, but a pot of capital rebates would be a great accelerant."

Christophe also advocates for the reintroduction of the Renewable Heat Incentive

for commerce and industry and the introduction of an advantage for local suppliers, similar to the Inflation Reduction Act in the US.

"Giving a 10% bonus on products designed or made in the UK would provide a huge boost for renewable energy," he said.

## The Naked Energy journey

After 13 years of research, development and patenting, Naked Energy is now poised to really scale up and bring solar thermal technologies to more businesses across the world.

The company has come a long way since Christophe decided to switch careers by taking a punt on an idea he had, financed by his credit card.

With an award-winning career in creative advertising under his belt, Christophe then decided to change course and follow in his grandfather's footsteps.

Peter Blenheim Williams was a clean energy pioneer of his time, well known for his work on the 'oscillating duck' — a wave power technology in the 70s and 80s.

As a child, Christophe remembers his grandfather telling him he was doing his work because fossil fuels will run out and an alternative would be needed.

His father is an aeronautical/mechanical engineer who also has a track record in innovation.

Christophe always had an itch to do something in the climate space and had designed environmentally-focused advertising campaigns as part of his earlier career, including on behalf of the government at the time.

It was when he had a conversation with someone working on solar thermal that the seeds for the new business were sown.

"He really opened my eyes to solar thermal and I became enamoured with it because it's so clean and pure," Christophe said.

"I joined with two engineers and came up with the hybrid tube, which is a globally unique product. I proposed starting the company and going for the patent.

"We put all the IP in there and did all the designs and patents, all on my credit card. We got our first recognition from Shell at an engineering competition, winning a £40K cash prize. Then we secured half a million euros in angel funding.

"At the time that felt like all the money in the world – we've now raised £27m."

The company has manufacturing bases in the UK and Europe, and is scheduled to start manufacturing in Dallas, Texas, later this year in partnership with its US distribution partner, ELM Solar.

While the technology is focused on commercial/industrial because it is suited to high hot water usage, residential solutions on a district

heating basis are not ruled out for the future.

## Going for growth

With the latest investment, Naked Energy is perfectly placed to capitalise on the huge economic opportunity presented by heat decarbonisation and the growing appetite for a totally renewable solution.

The International Energy Agency projects in its latest renewables report that the share of heat from renewable energy will increase by more than 40% worldwide between 2023 to 2028.

Naked Energy plans to accelerate the international distribution of its award-winning technology with the adoption of innovative new business models.

The relationship between E.ON and Naked Energy will also facilitate the provision of Naked Energy's technology through a Heat-As-A-Service model to a global client base. The two companies are already working on a pipeline of projects across multiple territories.

"Our latest investment shows that the urgency of heat decarbonisation has been recognised and funding to accelerate the energy transition in this way is crucial because it's not getting enough. E.ON has recognised heat decarbonisation as its number one priority.

So the future certainly looks bright for Naked Energy. All the foundations have been laid and it feels like real growth is coming.

"The crazy thing is it does feel like we're just getting started now," Christophe added.

"We are fanatical about heat decarbonisation and the core tech we use – solar thermal and hybrid solar thermal – produces more energy per square metre than any other technology. It's time to put the metal to the floor, the time to act is now."



# The growing significance of solar PV checks on systems up to 1500V

## A reliable solar PV system meter for professionals



**THE Sonel PVM-1530 and associated equipment comply with IEC 61557 and IEC 61010 safety standards and have the relevant CE declaration. IEC 61010-30 qualifies PV panels as belonging to the CAT III measurement category and, crucially, with its high CAT III 1500V DC measurement category, the meter can measure panels working at voltages up to 1500V.**

Housed in a carrying case, the meter is IP67 rated when the lid is closed. Its advanced cooling system efficiently dissipates heat, enabling frequent measurements without overheating. A large, clear to read touchscreen enables easy operation and high brightness means it is visible even in full sunlight. The built-in Li-Ion rechargeable battery offers a long autonomous operating time, and an internal power supply unit makes it possible to simultaneously charge the battery and make system measurements if the battery fully discharges during operation.

With its comprehensive set of standard equipment, the Sonel PVM-1530 enables engineers and contractors to make the full range of measurements for PV systems in accordance with IEC 62446-1 to maintain them in good condition for many years.

**R**OB Barker, Director of Power Quality Expert Ltd., has more than 25 years' experience in electrical test and measurement. With the number of PV systems

**on the rise, it is vital to ensure that they are safe and comply with applicable regulations. Rob considers the role for dedicated meters such as the new Sonel PVM-1530 meter in ensuring safety standards are met.**

The energy sector is transforming from a conventional and centralised model to a distributed model with the new approach heavily reliant on renewable energy sources, such as wind and PV power plants. In tandem with the installation of hundreds of thousands of microgeneration PV systems, large PV farms with substantial generation capacities are also being constructed.

The rapid increase in system numbers is not always matched by an increase in the quality of their components which can increase risks, reduce operational safety and shorten service life. This is why it is crucial for a system to be installed in line with applicable regulations and, once commissioned, to comply with all safety requirements.

Inspections, tests and measurements are essential in assessing the condition of PV systems. The primary assessment document is IEC 62446, a multi-part standard which defines the method and scope of safety checks for PV systems. Compliance with the standard's guidelines ensures that the risk of shock or fire is reduced. IEC 62446-1 defines the tests necessary to check not only the safety of a system (Category 1), but also its efficiency and that of its components (Category 2).

Offering a range of tools for comprehensive testing of solar PV systems, Sonel has added the PVM-1530 meter to its portfolio which facilitates IEC 62446-1 assessments and is designed for the measurement of PV systems operating at voltages up to 1500V.

### IEC 62446 procedures

Prior to making any measurements, a visual check of the PV system is vital to ensure that the electrical equipment has been correctly selected and installed, and that there are no visible irregularities or damaged components.

Once the visual inspection is complete, you can start to make the measurements. IEC 62446-1 divides testing into category 1 and 2 test procedures along with some additional tests.

#### Category 1 tests assess the safety of the system:

- Continuity measurement of protective connections and equipotential bonding with 200mA
- Polarity test
- Connection tests in DC junction boxes
- Measurement of the open circuit voltage of panels
- Measurement of the short-circuit current of a panel chain
- Measurement of the operating current
- Functional tests (measurement of DC and AC power on both sides of the inverter)
- Measurement of insulation resistance of DC circuits without short-circuiting panels

Category 2 tests are recommended for larger and more complex solar PV systems, and can be performed once all Category 1 tests have been completed and passed. The Sonel PVM-1530 meter makes it possible to measure the I-U characteristics of panels with a maximum power of 45kW.

#### Additional tests enabled by the meter are:

- Blocking diode test with 1000V or 1500V
- Assessment of shading using the Sonel IRM-1 irradiance meter

### Measuring I-V characteristics

I-V characteristics are very helpful in assessing PV system performance and identifying potential issues.

IEC 62446-1 specifies that irradiance must be at least 400 W/m<sup>2</sup> for this type of measurement. IEC 61829 clarifies that the total in-place irradiance should be at least 700 W/m<sup>2</sup> for measurements of characteristics to be extrapolated to STC (Standard Test Conditions).

PV panel manufacturers list parameters measured under laboratory conditions for STC: temperature 25°C, insolation 1000 W/m<sup>2</sup> and air mass factor AM 1.5.

For comparison purposes, the Sonel PVM-1530 can automatically convert measurement results to STC in accordance with IEC 60891. This is done with the Sonel IRM-1 solar and temperature meter, which works with the Sonel PVM-1530 wirelessly and with the built-in PV panel base.

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### KEY FEATURES

- Category 1 measurements according to IEC 62446-1
- I-V curve for category 2 measurements according to IEC 62446-1
- Measurement of STC conditions according to IEC 60891

### FEATURES

- Open circuit voltage up to 1500V DC
- Touch Screen Control
- Short circuit current test up to 40A DC
- Insulation resistance up to 1500V
- LoRa radio for long distance communication
- reSYNC automatic synchronisation of STC parameters with IRM-1

### IRM-1 FEATURES

- Solar radiation intensity (irradiance) in W/m<sup>2</sup> or BTU/ft<sup>2</sup>h
- PV panel temperature in °C or °F
- Ambient temperature in °C or °F
- Inclination angle of panels
- Orientation of the panels with the built-in compass

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# Can heat battery boilers help cool the planet?

How smart heat batteries can help accelerate the transition to net zero – without melting the grid in the process

**T**HERMAL energy storage (TES), also known as heat batteries, is an essential low-carbon weapon in the fight against climate change. With home heating responsible for nearly a fifth of emissions in the UK alone, scaling up domestic TES is critical to achieving net zero. Johan du Plessis, CEO at tepeo argues that smart heat batteries are vital to accelerate the transition to low-carbon heat while keeping the grid in balance.

Electric storage heating technology, like night storage heaters, isn't a new concept. Yet, despite having been around since the early 1960s, it is yet to become mainstream. According to the latest census, only nine per cent of households in England and Wales had electric-only heating.

A primary limitation of night storage heaters is that they aren't installed with wet heating systems (radiators or underfloor heating), which is currently used in approximately 23 million UK homes. Switching to this type of storage heating would entail replacing all wet radiators with night storage heaters – which would have a huge carbon footprint, not to mention the cost and disruption for homeowners.

## From storage heaters to heat batteries

Research and development have, more recently, focused on optimising storage materials and product design while integrating smart capabilities. The outcome of this effort has been the modern heat battery boiler.

Heat batteries and night storage heaters are based on similar principles. The main difference is that heat batteries are specifically designed to integrate into existing wet heating systems. With this technology, households can eliminate their gas boilers — and the associated greenhouse gas emissions — without replacing radiators. As mains gas is the only heating source for over two thirds of UK households, switching to heat batteries can be transformational.

However, not all heat batteries are created equal. While some are predominantly aimed at water heating, others are specifically designed for space heating.

## Different materials, different applications

Some heat batteries use phase-change materials to store thermal energy. These materials have minimal heat loss, and are typically used in hot

water production to replace traditional domestic water cylinders. Due to their lower energy density, they are typically unsuitable for space heating.

By contrast, magnetite materials display two-to-three times the energy density of phase-change materials. These heat batteries can reach temperatures as high as 800 degrees while being fully insulated and enclosed for complete user safety. Reducing size and footprint is essential to making TES suitable for homes where space comes at a premium.

## How can heat batteries complement heat pumps?

Heat pumps have established themselves as the go-to low-carbon heating technology, thanks to government subsidies. Widespread adoption of these heating systems remains critical to achieving net zero. However, there are limitations to how many heat pumps can be installed.

Firstly, not all UK homes can be fitted with heat pumps. Around 20 per cent of the housing stock, including millions of traditional terraced houses, present challenges to heat pump installation, due to insufficient outdoor space, and this percentage may be even higher. A 2024 study from the University of Warwick found that, although



around half of UK homes were “eligible” for heat pump installation subsidies, only eleven percent of homes were likely to be “heat pump-ready”. Costs to upgrade pipework and radiators, lengthy installations and planning permissions are other barriers to adoption.

Secondly, the International Energy Agency (IEA) warns that “without improving efficiency in parallel” heat pumps can nearly triple their peak demand during winter. Therefore, retrofitting combined with “careful grid planning and demand-side management”, will be critical to mitigating this surge in demand.

Highly flexible technologies like heat batteries can complement heat pumps in two ways. They can be deployed in houses unsuitable for heat pumps, making decarbonised heating accessible to all, and they can ease pressure on the grid by shifting energy demand away from peak times.

## Being smart about heat storage

Similar to the batteries in smartphones and EVs, modern heat batteries use smart algorithms to optimise energy use. Demand prediction algorithms analyse historic patterns and weather forecasts to determine accurate heat requirements. In addition, charging algorithms optimise energy use based on the household's electricity tariff and grid carbon intensity, ensuring that the battery only recharges during off-peak times when electricity is the cheapest and the cleanest. These algorithms can even adapt to the most advanced dynamic tariffs, reflecting half-hourly wholesale electricity costs.

Heat batteries can help balance the grid by completely decoupling energy consumption from heat demand – recharging only when demand is at its lowest, and releasing heat only when this

is actually needed. In addition, they constantly monitor grid frequency and can stop charging in response to frequency drops.

## Faster installation, faster decarbonisation

Many UK households only decide to replace their boiler when it breaks down, meaning speed of installation is a critical factor when selecting a new boiler. Heat batteries can be installed in 1-2 days, minimising the time that a family spends without heating or hot water.

Installers can learn to fit a heat battery in less than a day. They don't need the gas safety or refrigerant training that would be required for gas boilers or heat pumps, respectively. Speed and ease of installation are key to accelerating the uptake of low-carbon heat technologies.

## The future of heat batteries

As dynamic energy tariffs evolve, heat batteries will be able to meet the higher heat demand of larger houses without increasing their carbon footprint – and, potentially, even reducing it. This evolution will involve charging flexibly throughout the day, rather than in the single overnight period typically seen in existing smart tariffs.

Another fundamental advancement will be integrating space and water heating into one product – similar to how combi boilers work. While space-heating batteries already enable indirect water heating via a water cylinder, these devices will, in future, be accessible to homes without water cylinders.

By continuing to optimise product design and smart capabilities, heat batteries will be critical to the UK's transition to net zero. This technology can bring low-carbon heating to homes while helping ease pressure on the grid.

## Installer insight



**HEATING engineer Martyn Jones is the director of Bewdly-based M4RT, a company committed to choosing the right product and delivering tailored heating solutions to keep customers warm and reduce both their energy bills and carbon foot print. Martyn shares his firsthand experience of installing heat batteries.**

I was hesitant at first, as most boiler professionals who are used to working with gas are but once I put tepeo's ZEB® in and it worked the same as a boiler is supposed to I couldn't believe it – it was amazing.

I thought to myself, for somebody who can't have an air source heat pump or doesn't want the upheaval associated with one, this is a perfect option. It is exactly like a gas boiler, it heats the radiators the same, pipework you can pretty much keep the same and so I thought... perfect. It's another choice for our customers.

The training for the installation process is very straightforward. If you've been working in the trade and involved with heating for a while and already know your stuff, this is second-knowledge. It roughly takes a good day and a half to install the ZEB, which is a standard install of a new boiler, so the process is the same. We have to ensure the system is clean as obviously if you're removing an old boiler you need to brick up the hole and then plaster and make good then remove all the old pipework.

## Good for customers. Good for us

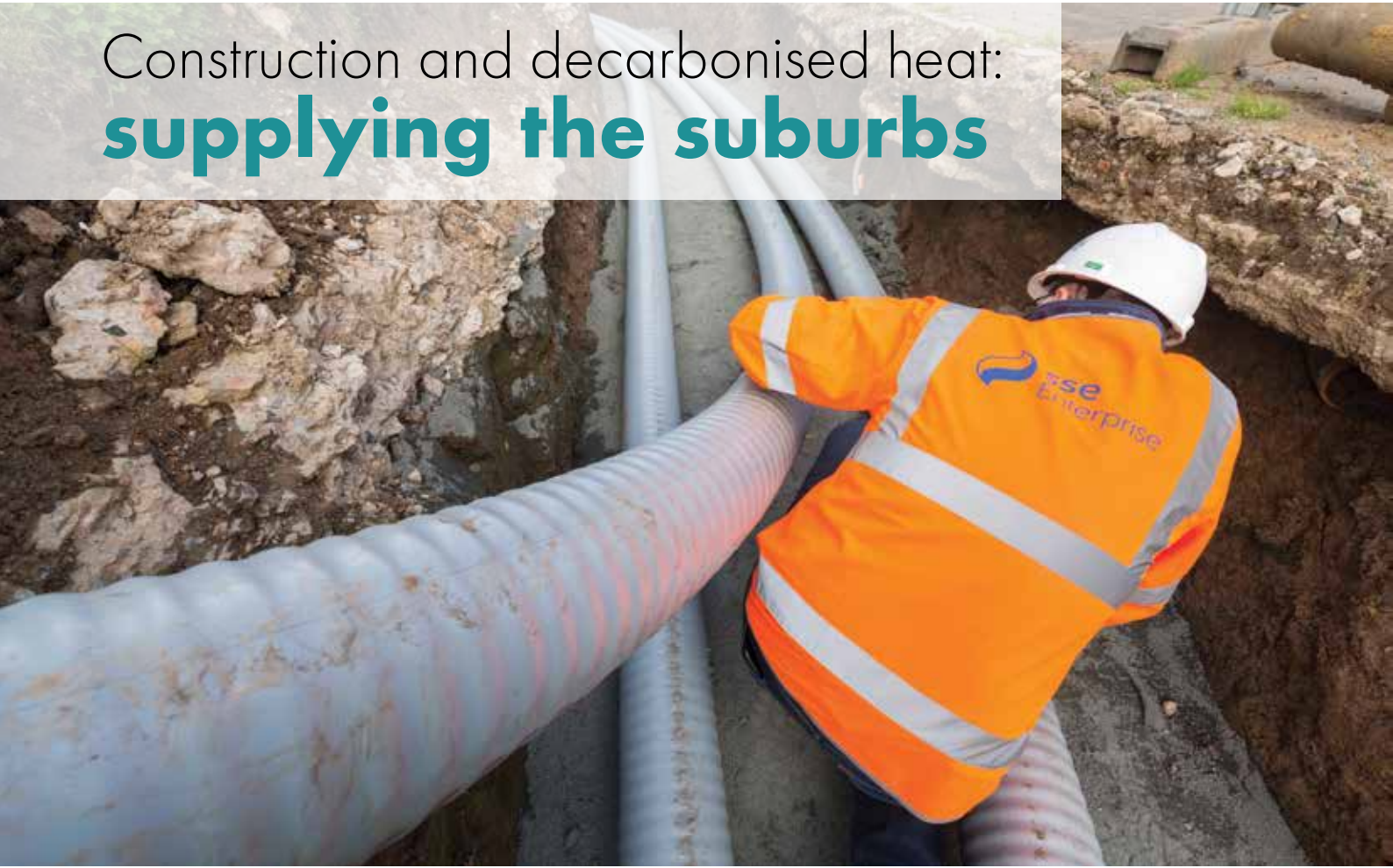
The tepeoPRO App is brilliant, I wish more gas boiler manufacturers had a similar App which tells you exactly what the boiler is doing and exactly what you need to know as a heating engineer. I love the App, I think it is great.

The best thing is that the ZEB is delivered onsite by the tepeo team – they bring it in and position it exactly where it needs to be and if not we can always move it to where we want it using the jacking wheels. The best thing about it is, it has been well thought about and the process is very straightforward.

Our customers say that the ZEB is very little hassle – our Trustpilot reviews for ZEB installs are incredible.



# Construction and decarbonised heat: supplying the suburbs



**T**HE continuing phase-out of gas boilers leaves new build housing construction at a crossroads. Debate continues over what comes next in home heating, but with sustainability, efficiency and cost effectiveness proving key, district heating networks are growing in popularity as a potential option. With this in mind, Steve Richmond, Head of Marketing and Technical at REHAU Building Solutions division, explores considerations around installing schemes for new build developments, with a specific focus on low density housing.

The key figure in UK residential construction is 370,000. This is the number of homes the new government has committed to building annually. The feasibility of this number, revised upwards from 300,000, may be up for debate. However, the underlying sentiment – that the UK needs far more homes to meet the population's housing demand – is not.

Running parallel to the national housing debate is the discussion around decarbonising home heating. The Government has long committed to a phase out of fossil fuel-burning gas boilers as part of its net zero 2050 goals. As this technology is still the most used when warming homes, the scale of this task is undeniable. As such, a

multi-stage approach punctuated with specific deadlines is understandable and practical.

Though these deadlines have shifted, one key plank of the decarbonising homes strategy has not. Indeed, while the phase out of fossil fuels in off-gas domestic buildings and ban on gas boiler sales for housing – both scheduled for 2035 – no longer applies to all properties, the ban on these boilers for new build houses does apply from 2025 as part of the Future Homes Standard.

## New heating options

This begs the question of where house builders go from here, with debates over replacement heating technology options continuing. In housing, this usually boils down to three options – heat networks, individual heat pumps or hydrogen. Though the merits of green hydrogen have been strongly debated, its viability for domestic heating has come under increasing scrutiny, with recent announcements showing a trend away from the technology at a governmental level.

For instance, the National Infrastructure Commission, the executive agency responsible for advising the Government on the UK's infrastructure challenges, has advised that hydrogen should be ruled out for home heating applications, citing efficiency and cost concerns.

Alongside this, Energy Minister Lord Callanan emphasised in a November interview that hydrogen would have only “a very small role, if at all” when it comes to domestic heating.

Though the government is not set to make a formal decision on hydrogen's role in future domestic heating until 2026, events such as these show a clear trend. With hydrogen's viability being questioned but the gas boiler ban remaining unchanged, house builders need to consider what sustainable and efficient options are available now.

Exploring the possibilities of low carbon district heating, and more specifically, fourth and fifth generation networks, will be a key part of this. Indeed, even before these developments around hydrogen, data from Energy Systems Catapult has stated that one in five homes are set to be heated via heat networks by 2050. With this in mind, this previously ambitious estimate might actually be conservative.

## The Next Generation

Currently, third generation district heating systems remain the most commonly used type on live projects in the UK. Designed with flow temperatures of 80-90°C in mind, these networks often use a central fossil fuel-based source that will likely not support current heat

decarbonisation goals. However, the rise of fourth generation heating models with flow temperatures of 60-70°C certainly do, as this lower heat means they are ideally combined with low carbon heat sources such as heat pumps, biomass, solar thermal, geothermal or waste heat.

Fifth generation systems are also using heat pumps, but differ from the single external plant model in favour of decentralised individual heat pumps for each building to boost flow temperatures. There are pros and cons of both 4th and 5th generation systems and the choice will need to be based on a project-by-project basis but 4th generation is a simpler design transition from a 3rd generation viewpoint.

District heating technologies have long been associated with high density urban areas, where it has undoubtedly thrived and will hold a key role in decarbonising the UK's cities. Yet given the direction of travel on decarbonising heat, conversations must be had on the role of heat networks in the suburbs – especially on new, low density housing developments.

**Low density, high practicality**

The perceived barriers associated with district heating systems in these environments are usually around cost and practicality. Although the length of pipes required are longer in these lower heat density projects, the fact the pipes can be installed at the same time as other utilities in a trench makes the installation cost far lower than retrofit schemes. It is still possible to ensure heat losses are kept to a minimum over these distances using high quality PUR foam pipe systems.

The majority of district heating pipework for new build housing will be able to be installed in new open trenches which are already dug by the developers for water, wastewater, telecommunications and power. Often this will run under future front gardens or along pavements in the new streets being created. Flexible polymer pipes in long coils over 500m are perfect for these applications allowing a faster installation than traditional steel pipework,

ordinarily available in 12 metre lengths.

For lower density development layouts, this combination of flexibility and ease-of-use may appeal to developers, especially combined with the possibility of narrower trenches because extra space is not required for welding or expansion loops as is necessary with steel. Taken alongside the decarbonised heat sources possible with modern heat networks, it is clear why polymer pipework-based pipework is being increasingly specified in new build housing developments.

**Meeting growing demand**

There are other practicalities behind decarbonising the nation's heat which must be considered. The Government has previously set a goal of 600,000 heat pump installations per year by 2028, yet only 72,000 were installed in 2022. Given the ambition of this target and the pressure on the supply chain and associated workforce to meet it, avenues to streamline installation should be welcomed.

In this context, fourth generation district heating systems may stand out as a compelling option. The scheme's potential use of a large single, external heat pump not only minimises maintenance requirements and issues around home access and remedial works, but it also ensures a singular installation can be used to heat multiple homes and the economies of scale associated with a larger heat pump.

As polymer pipework connections use permanent mechanical jointing methods, they can also be fitted swiftly by civil or mechanical contractors without specialist hot works. REHAU, for example, uses EVERLOC – a patented and proven compression sleeve technology developed in-house on the back of extensive research and customer feedback. It forms a leak-tight connection of PE-Xa pipework in a two-part system that can be fitted without specialist training which involves no O-rings and requires only a simple visual inspection.



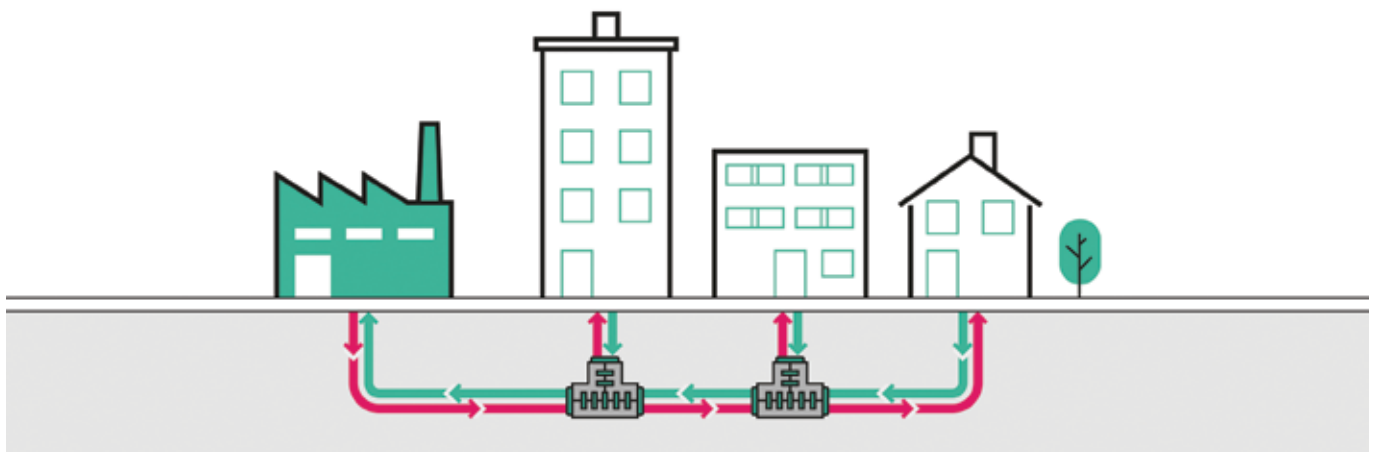
**Safeguarding homeowners**

Finally, beyond the practicality and applicability of district heating systems in lower density housing developments, the energy regulatory landscape continues to favour fourth and fifth-generation schemes. The 11,800 registered heat networks in the UK, which deliver around 13.5TWh of heat annually to 470,000 domestic customers, will be coordinated by national energy regulator Ofgem from 2024.

With the technology regarded as key to the Future Homes Standard's emission reduction aims, which mandates all new homes built from 2025 emit 75-80% less carbon dioxide, this move will likely have a major impact on the housebuilding industry. Specifically, the introduction of formal Ofgem regulation around performance, price, service and supply, moving away from the current self-regulating model that governs heat networks, making district heating more attractive to the sector.

When looking at the demand for new homes and the drive towards decarbonised heat, industry cannot look at these challenges separately. To remain on track in these areas, house builders and contractors must look for solutions that thread both needles. Given the advances in pipework materials and low carbon energy sources, district heating networks could be that solution – especially in the construction of low density housing.

To effectively meet demand, it is vital that industry engages with the supply chain to address key considerations around specification and installation. By doing so, project stakeholders can remain ahead of the curve from a technological and regulatory standpoint.



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# Say 'No' to the DNO



**E**VEN after Ofgem's last Significant Code Review, there have still been plenty of expensive grid connection and upgrade quotes. Here, Chris from Xerogrid Limited explains another approach that can save time, money and hassle.

## Effects of the SCR

With the release of Ofgem's Significant Code Review in April 2023, came hype about 'free' connections and upgrades to the network, with costs under £1720 per kVA for network reinforcement being socialised into everyone's Distribution Use of System costs. Swathes of developers held their applications back until April Fool's Day, in the belief that they would save many thousands (or more) on their projects.

But, such is life, whenever there are winners, there are also losers. Whilst the price cap covers 'reinforcement' to the network, the developer is still liable for all 'extension' charges. Also, it only covers connections up to one voltage rung higher than the final point. Whilst the distribution network operators (DNOs) must provide the lowest cost overall, this may be to the benefit of the DNO, rather than the developer, so you may not receive the lowest cost quote to you.

This has left many companies blindsided by unexpected grid costs, coupled with increased wait times as the queue built substantially after the 2023 gold rush. Many have opted for a non-firm offer, with which demand or generation is curtailed at certain times of the day to avoid overload. As such, the DNOs have incentivised these with curtailment limits and agreement end dates, to encourage people to grit their

teeth and sign them. However, the feasibility of these agreements depends on the load being variable, such as by charging an electric vehicle fleet at night. If your load cannot be controlled, the terms may prove impossible to adhere to.

## DNO minefield

How much you pay for a connection or upgrade still very much depends on what the DNOs class as reinforcement, as opposed to extension, as well as whether the offer is firm or non-firm, and what works best for them. Queue times can be somewhat of a post code lottery, with certain areas taking priority. It can almost feel like it depends on which way the wind is blowing, as is exemplified by three of our recent clients:

Firstly, a chicken farmer built a new chicken shelter, with state-of-the-art automation and heating. He needed his standard 100 Amp

single-phase supply upgrading to three-phase. The quote cost was £82,000 with an eighteen-month wait time.

Another client was rapidly growing their campsite and hotel in Wales, and needed to upgrade their supply from 60 kVA to 150 – they were quoted a whopping £150,000, and it wasn't even increasing the number of phases. They were given an indeterminate queue time at the time of writing.

Finally, the owner of a luxury wedding venue in Yorkshire needed their 100-Amp supply upgrading to 140 kVA three-phase import with 264 kVA of export to avoid blowing their fuse every six months. You would expect that cost a lot, but the quote was only £14,000.

Luckily, the first two clients had the sense to seek an alternative solution, which is exactly what they got.

## To grid or not to grid: is that the question?

To be clear, saying 'no' to the DNO is not always the best option. If, like the wedding venue, your connection is relatively low-cost, the business case for doing so may be weak. Also, you should query unexpectedly high quotes if the reasoning is shaky, such as connecting at 33 kV instead of 11 kV. It may be disputable, if the DNO has put their own interests far above yours.

Nonetheless, many developers see these costs as an inevitability. They pay the fees and ask questions later; questions like: 'Is there another way?'

If you were told that the answer could be to go off-grid, this may conjure up ideas of tin foil hats and peace symbols, which is certainly not suitable for a commercial site. Though, this is exactly what we helped our clients to do, in a sense. Their original grid connections remain, but no loads or generation on the sites are connected directly to them. It is a sort of off/on-grid setup.

The system simply requires a containerised battery system (600 kWh for the campsite and only 160 kWh for the chicken farm), which is trickle charged by renewables. All the loads are connected to the system, which then becomes the main service head. The grid can charge the battery at a set capacity, with a unidirectional charger that cannot feed back at all. It becomes a protective bubble around the loads to stop unacceptable strain on the distribution network.

This provides multiple benefits to the client. It can provide higher current and three-phase when it is required, without the expense and time required dealing with the DNO. Although, you could also use this system in conjunction with a non-firm connection offer to easily control your import and export to firmly keep to your contractual arrangements. You could even go completely off-grid by replacing grid backup with a generator.

## Impressive return on investment

Of course, this system is unlikely to cost less than any grid connection offer, and if you're planning to go completely off-grid with a generator, you will need a significant amount of renewables generation to offset the high diesel costs.

However, the ROIs we project for these setups typically range between four and six years. Once you factor out the DNO connection cost that you will no longer be paying, you effectively have a very low-cost energy storage system for your renewables generation. Our chicken farmer client also saved a cool £70,000 by avoiding the need to purchase a generator because those chickens couldn't wait eighteen months for heat and light.

With battery costs so low, and grid connection costs so unpredictable, such a novel and simple solution might be the time and cost saver you didn't know you needed.



**NEW installer certification scheme has entered the market in a bid to help drive standards, increase the number of certified installers and offer more choice to the industry.**

By the founder's own admission, Flexi-Orb is more challenging to complete, and more expensive.

So what do the installers think? In this article you can read more about the scheme, hear from its founder and managing director, David Lindsay, and see what the first certified companies think of the process.

Flexi-Orb (Flexible Energy Oversight Registration Body) is the newest UKAS-accredited certification for the installation of solar photovoltaics (PV) and electrical energy storage systems (EESS). It is also the first in the UK to offer a certification for the installation of electric vehicle charge points (EV).

Flexi-Orb was established by parent company, Certi-fi, three years ago, in a bid to drive up installation standards for the benefit of domestic consumers and to increase the number of certified installers in the domestic renewable installations market.

Since then, the company has been running a beta service and formally launched its scheme in June with two certification bodies.

"We've been surprised at the interest," says David Lindsay, managing director of Certi-fi.

"We expected a slow start, but it seems that more installation companies want to evidence their quality is above the market median. Our job now is to ensure that our certification bodies are fully supported, that installers understand the certification process, and that consumers know that this is the premium mark of quality against an installation."

Two of the first companies certified are Project Solar and Sunsave.

## The Project Solar experience

Project Solar is one of the UK's largest solar installation companies. Based in the North West, it has been servicing the 'able to pay' market since 2011.

The company has over 25 installation teams across the UK and has seen significant growth due to the quality of its installations.

"Our entire business rests on two things; installations and the quality of our customer service, so being at the forefront of advancements in renewable energy is incredibly important for us" says Tom Armstrong, managing director of Project Solar UK.

"We operate various business models and we are about to launch a 'fit and forget' scheme, so having exceptional quality installations is paramount to the success of this model.

"We are particularly proud of achieving one of the first Flexi-Orb certifications, as it signifies a high standard of quality. Maintaining these standards is not only beneficial for our business but also assures consumers of our reliability.

"It's not easy to achieve this standard and that's why it's attractive to us; it represents the gold standard of solar installation at a time when solar has hit the headlines.

"We already have a fantastic reputation and consistently high review scores but the Flexi-Orb review centre is another avenue for us to show that we are an installation company that can be trusted.

"The process was quite rightly challenging. But for us, having a more robust and practically- focused certification scheme means that installation standards go up, consumers gain more confidence in solar installation and the market will continue to grow, which is great news for high quality installation companies.

"Companies often see certification as a time or cost, but for us, it's simply a matter of reputation. We know our installers operate to the highest standards, this gives the consumer peace of mind that they are getting the very best service, something we pride ourselves on."



# Flexi-Orb

## – what installers think

L to R: Sunsava  
Co-Founders Alick Dru  
and Ben Graves

### The Sunsava experience

Launched in 2022, with a mission to make the power of solar accessible to all UK households, Sunsava offers a unique alternative to customers – a long-term solar subscription with no upfront costs and ongoing monitoring and maintenance, provided through a 20-year guarantee to ensure the system's performance and longevity to give customers peace of mind.

The startup was recently awarded almost £2million from the UK Government's Green Home Finance Accelerator (GHFA), part of the Net Zero Innovation Portfolio, and has significant backing from leading investors.

Ben Graves, co-founder at Sunsava, said: "We set up Sunsava to make solar power accessible to everyone. Rather than partnering with a bank, we provide financing ourselves, so our customers can deal with one company for the installation, financing and ongoing maintenance. Our subscription model means that solar panels can pay for themselves from the very beginning.

"We founded the business in 2022 and launched our subscription model, Sunsava Plus, at the beginning of this year. We have grown incredibly fast, more than doubling volume every month. Given the recent government announcement we expect this phenomenal growth to continue, and having the highest quality installations is absolutely essential to our success.

"There are two aspects to Flexi-Orb that we think are differentiators. Given that we both finance and maintain our installations for 20 years, it's vital that they are installed to the highest standards.

The Flexi-Orb certification requirements bar is set much higher, protecting both our customers and ourselves.

"The process of certification is more challenging but it's also far more relevant – it's more focused on the practical side of installations than the theoretical.

"We see the industry moving quickly over the next few years and market dynamics are likely to evolve. It's important for us to work with a regulatory body that can adapt quickly and move with the times."

### 'An industry-focused and challenging scheme'

Certi-fi has also been successfully running the Energy Performance Validation Scheme (EPVS) since 2016. EPVS protects lenders, installers and consumers from incorrect system designs and performance estimates – increasing consumer confidence, facilitating funding facilities, leading to more sales.

David is passionate about facilitating the industry to improve consumer outcomes.

"Flexi-Orb has undergone three years of beta testing. We wanted to give installers, consumers and other stakeholders a choice about their certification provider, which meant the scheme had to find ways to differentiate and stand out," David said.

"What we have launched is an industry-focused and challenging scheme, I think that the early response shows that installers want to evidence their quality.

"Our scheme is the first to undergo rigorous assessment to ISO/IEC 17067:2013 by UKAS, the first accredited to certify EV charging points, and we are the first company to have a Scheme Owner Agreement with UKAS – which means we are continually assessed to ensure that the scheme meets the requirements of the industry.

"Flexi-Orb and EPVS, separately and together, help drive up consumer confidence in the market. The new government's commitment to rooftop solar is a breath of clean air, but we need to be mindful of the mis-selling issues that occurred under the FIT Scheme and ensure that they're not repeated – they damage the whole industry.

"EPVS protects the consumer from misleading information, Flexi-Orb ensures that the standard of installation is high and, critically, supports both the consumer and the installer should any dispute arise.

"We're making sure that the CTSI approved Consumer Codes are part of our proposition – they're experts in achieving sensible resolutions. We're committed to ensuring that the protection of an insurance-backed guarantee is in place for all consumers.

"If the Government is true to its word, then the renewables industry is about to move up a notch – we want to play our part in supporting installers to get the best outcomes for domestic renewable customers."

Flex-Orb certification is currently available through Simply Certification and Blue Flame Certification, with more certification bodies expected to join throughout 2024.



# ‘Installers are the most knowledgeable stakeholders when it comes to understanding the challenges we face as an industry’.

**E**LECTRIFY Heat is a cross-industry coalition of relevant parties working together to further the electrification of heat agenda.

We spoke to its secretariat co-ordinator, Leo Vincent, who is also policy advisor at E3G, to find out more about the aims and ambitions of Electrify Heat and what this means for installers.

**Q** What is the purpose of your organisation?

We work to enable the mass deployment of clean, efficient heating systems across the UK – predominantly electric heating.

**Q** What is the membership of the organisation?

A broad church membership; a cross section of the entire supply chain and ecosystem of electric heating systems. We are a cross-industry coalition made up of the UK’s leading energy companies, heat pump manufacturers and installers, consumer groups, financial institutions and trade bodies.

**Q** How many members do you have?

28

**Q** What are the objectives of your organisation?

- We want to see Government create a long-term and stable policy ecosystem which gives industry and investors confidence.
- We want to see the cost of electric heating come down (upfront cost of purchase and installation, running cost, and ‘hidden’ costs).
- To boost awareness and understanding through the creation of a national expert retrofit advice service for England to accelerate and derisk delivery of electric heating.
- To fight misinformation and bad faith actors lobbying parliament unimpeded.
- We want Government to find new ways to support the expansion of skills and the wider supply chain.
- To help policymakers unlock private and public finance and to bring new consumers to market.

**Q** What are the current challenges facing your membership and the broader sector?

The politicised culture wars against net zero, and heat pumps specifically, from right wing politicians and the right-wing media. The costs involved are still high for many households, especially the artificially high cost of electricity relative to gas. Also a lack of awareness about heat pumps and the Boiler Upgrade Scheme and the proliferation of misinformation in the sector. A chaotic former Government has damaged industry, consumer and investment confidence.

**Q** What are your main current activities?

We are asking Government to take the following actions to accelerate growth in the adoption of low carbon technologies:

**Reduce the running cost of electricity.** In the UK, electricity is artificially priced four times higher than gas – the most expensive electricity in Europe. For heat pumps, this means an effective elimination of their efficiency advantage over gas boilers, resulting in disproportionately high running costs and a much less attractive consumer offer. Long term and intermediary policy is urgently needed to address this price gap if we are to see the required increase in the uptake of heat pumps.

**Forge ahead on the two easy wins.** The Clean Heat Market Mechanism (CHMM) is technically due for its delayed introduction in April 2025, but a lack of clarity and commitment from the previous Government, along with a sustained lobbying effort from the gas industry, has resulted in confusion and uncertainty about its introduction. The Department for Energy Security and Net Zero (DESNZ) must reconfirm their commitment to the policy and sign-off on introduction of the CHMM from April 2025.

The Future Homes Standard is the UK Government’s raising of building standards for new homes, including the ambition for homes of the future to be built to better and efficient standards with low carbon heating, predominantly heat pumps. Similarly to the CHMM, industry is long awaiting the next steps to introduction, and we urge the Ministry of Housing, Communities

and Local Government (MHCLG) to publish the response to the technical consultation urgently.

**Introduce a home upgrade loan scheme.**

Many countries have successfully introduced government-backed loan schemes for homeowners to improve their property’s energy efficiency or to upgrade to cleaner, greener technology like heat pumps. Treasury should provide the UK Infrastructure Bank with a ringfenced, flexible, long-term draw-down fund for lenders, offering zero and/or reduced concessional interest rates through a consumer focused initiative.

**Support skills and the supply chain.** UK

Government must provide long-term policy certainty and stability to convey to heating sector workers that heat pumps are the future, not gas or oil. As an industry, we need to increase awareness of the Low-Carbon Heating Technician Apprenticeship, including among installers, colleges, and potential students. We must do more to engage the next generation of workers by highlighting the potential offered by the sector and how to train for them.

**Get the grid in gear.** To decarbonise heating, we must decarbonise the grid, and that means investing in transmission infrastructure and coordination between Government, Ofgem, the National Energy System Operator and the network operators. The priority now is moving from action plans to delivery models and investment at pace. This includes investing ahead of demand, a shift in Ofgem’s investment regime, speeding up planning



and consent processes, and ensuring the supply chain has enough capacity to achieve the grid upgrades required.

**Improve advice and marketing.** Government should introduce a national, public awareness-raising campaign on the benefits of home energy efficiency and low carbon heating. When it comes to retrofitting our homes, Government has a crucial (and currently under-developed) role to play – not just in the transition, but in the consumer journey as a trusted messenger. Create a national expert retrofit advice service for England to accelerate and derisk delivery of the Warm Homes Plan.

**Enable the full capability of all heat pumps.** Unlock the potential of smart time-of-use tariffs for electric heating to significantly lower bills and reduce the need for, and to complement, future grid upgrades. UK Government must deliver an effective smart meter roll out, promptly introduce half-hourly settlement, and set out clear standards to enable interoperability. In addition, policy should support distributed heat networks and ground source heat pumps on shared ground loops, giving more low carbon heating options for consumers in flats and other high-density buildings.

**Reform EPCs.** Energy Performance Certificates (EPCs) are a key tool for engaging and informing consumers, but desperately require reform to

ensure they are effective. Government should proceed with the relevant planned consultations on EPC reform and convene an expert panel with a remit to recommend a package of reforms to EPCs within one year.

**Air source heat pumps – a prize for people**

As a nation, we face challenges today like never before. A spiralling cost of living, a climate rapidly running out of control, and the sharp decline of our industrial heartlands – to name a few. And while there are no silver bullets in policy, at Electrify Heat, we believe that changing the way we heat our homes can turn the tide in all these struggles.

Electric heating, predominantly air source heat pumps, offer an immense prize to the British people. With accelerated deployment of heat pumps we can lower energy bills for households, protect the jobs of the future for our heating industry, and create a safer climate for all. The facts are that heat pump are up to four times as efficient as a gas boiler, have zero emissions, and can save households money on their energy bills.

However, without accelerated deployment of electric heating, we risk blowing our carbon budgets, costing households more in energy bills and remaining reliant on despots like Putin for our national energy needs. We also risk being left

in an industrial dark age as global heating system manufacturing progresses to heat pumps over boilers. We work with Government to make sure the needs of our industry and the British people are heard, and are understood.

The new government needs to establish a robust framework for heat decarbonisation, including ensuring heat pumps are standard in all new homes, making electricity prices fairer, and introducing a new green loans scheme for retrofit. This is needed to support an industry that’s growing. Since increasing the Boiler Upgrade Scheme Grant to £7.5k, applications for heat pumps have shot up and steadily grown. In May, 2,905 applications were received, almost double what they were at that time last year.

Fundamentally, Electrify Heat believes that the installers on the ground are the tip of the spear when it comes to heating decarbonisation, but that they are also often the most knowledgeable stakeholders when it comes to understanding the challenges we face as an industry. We work with everyone and anyone who shares our mission to make clean, efficient electric heating solutions a reality for all British people; and we’d love to hear from you.

**Please reach out if you’d like to discuss further. Leo can be contacted via email at [leo.vincent@e3g.org](mailto:leo.vincent@e3g.org).**

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- OFT21-504G - Installation, commissioning and servicing of ground source heat pumps.
- OFT21-504D - Design of heat pump systems.

On completion, heating businesses can access OFTEC’s heat pump CPS, MCS or Trustmark registration schemes, allowing you to access several funding initiatives and putting your business in prime position to benefit from the growth of the heat pump market.




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## INDUSTRY VOICE Case Study



**“We’re proud to champion the voice of the installer”**

**C**ITY Plumbing, the first national plumbing and heating merchant to become a member of the Heat Pump Association, speaks with REI about their reasons for joining, and the importance of the trade association to the industry.

City Plumbing became the first national plumbing and heating merchant member of the UK’s Heat Pump Association (HPA), the trade association committed to accelerating the deployment of heat pumps UK-wide, when it joined in December 2023.

The HPA acts as a central point for the exchange of knowledge and information on all things relating to heat pumps and liaises with the Government directly on behalf of its members. It also works to inform the public and the wider HVAC industry about the benefits of heat pumps to encourage adoption.

Dave Evans, CEO at City Plumbing, said: “The membership enables City Plumbing to provide a supply chain perspective, and work with other like-minded association members to support the UK’s net zero ambitions and help meet the UK’s goal of 600,000 heat pumps per year by 2028. By joining the HPA, we hope to bring a new outlook to the organisation, with a strong understanding of the supply chain and the challenges and concerns of the installer base.

“Joining the HPA demonstrates our unwavering commitment to supporting the transition and adoption of renewable technologies and low temperature heating in the UK.”

### Active support

Hemal Morjaria, Managing Director of City Plumbing’s Renewables and Electrical division, added: “Installers are the ones who will make the Government’s commitment to net zero a reality. We believe it’s important for merchants to join organisations like the HPA so we can join industry conversations and help shape the future.

“We’re proud that we were the first plumbing and heating merchant to join the HPA so we can champion the voice of our installers to drive positive changes for both those who are already installing heat pumps and those with the potential to become heat pump installers.

“Since the start of 2023, we’ve helped over 350 plumbing and heating engineers become accredited heat pump installers in partnership with GTEC Training. Joining the HPA is another important step for City Plumbing in actively supporting the adoption of renewable technologies.”

Earlier this year, City Plumbing opened its second specialist Renewables Centre in Basildon and also recently ran a series of Electrification of Heat events giving installers access to a broad suite of renewable products and support on installation.



## A Day in the Life...

**Name:** Joshua Charlesworth

**Organisation:** SolarEdge Technologies

**Job title:** Technical Services Technician

**Location in the UK:** Hybrid working, living in Suffolk, and working in the Cambridge office.

**In this edition of our popular feature, we're chatting with Joshua Charlesworth, a technical services technician for SolarEdge Technologies. We discover what a day in his life looks**

**like, from the moment his alarm signals its start, to the last thing he does as it ends**

### Your company in one line

Manufacturer of DC-optimised solar inverters and power optimisers for residential, commercial and utility. We also address smart energy management, battery storage, EV charging and grid services solutions.

### My alarm goes off at

This depends on whether I'm going into the office or not. If I am, 5:45 am. If not, 6:45 am!

### The first thing I do each day is

After waking up I feed my cats, make a coffee and, sitting outside if I can, I just chill out for a bit before starting the day.

### I prepare for the day ahead by

always try to prioritise tasks at the start of the day. Although, of course, working in a support role, new things pop up all the time, so it's important to be flexible and reprioritise tasks as the day progresses.

### I can't leave the house without

A quick stroke of my cats, and making sure I have coffee and snacks for the journey to work.

### My typical day...

My typical day is spent trouble shooting issues for SolarEdge customers. These are usually installers but we also speak directly to end-users. My job is to identify the cause of any issues they are experiencing, and to recommend a solution. The issue could be something going on around the system – damage caused by rodents, for example, or birds nesting in the array that can affect the productivity due to debris sitting on connectors, or cause connectors to become loose. It may be related to the equipment, or even the result of an installation error. Even

though the problems are often unrelated to our products, we like to go the extra mile to help our customers pinpoint, and remedy, any problems.

My team and I pride ourselves on responding to all issues as quickly as possible. Everything we do on a day-to-day basis is focused on that goal, to make sure we provide excellent service to our customers.

### My most memorable work moment

Some of my recent projects have been my most fulfilling yet, and likely will be some of the most memorable.

For example, I recently took a call from a very unhappy installer who was frustrated that the solar system they had installed on a residential customer's premises did not appear to be producing power. They contacted us because they thought the inverter was the source of the problem. However, by asking the right questions and by examining the data coming out of the system using the SolarEdge module-level monitoring platform, we were able to quickly identify that it was actually the panels that were at fault and pinpoint its location, without the need for an in-person inspection. They were grateful to avoid the cost and time this would

have taken, and to get a clear picture of the issue. For me, it was really gratifying to see their opinion turn around so dramatically from frustration to gratitude for our service.

On occasions when it is necessary for the installer to get up onto the roof to carry out assessments and repairs, we help to coordinate the process for them. For example, I'm currently helping a customer with a system issue on a rooftop that requires scaffolding for access. Generally this creates longer lead times as scaffolding is rarely immediately available and takes time to assemble; however, we have been able to help move things along quickly. I've been keeping the installer updated throughout the process and they've been really grateful for how efficiently it has been coordinated.

### The worst part of my job

Working in customer service, you might expect me to say something like 'irritable customers', but I actually enjoy that part of the job, as I can understand where they're coming from and there's always a solution. I genuinely enjoy speaking with customers about their issue and finding a resolution – eventually winning them over!

The worst part of my job is cleaning out the coffee machine! I hate doing it, but I'm a bit particular about it and once I've spotted it needs cleaning I can't resist cleaning it.

### The best part of my job

The best part is definitely being able to make customers happy again. That's what I'm here for – to make our customers' lives easier and enable them to get on to their next job as quickly as possible. I really enjoy speaking to people and providing proper personal customer service, rather than being a robot on the other end of the phone line or screen. For me, it's a really satisfying job.

### I relax after work by

I like to unwind with my girlfriend by going for a walk after work and talking about our day. Then, when we get back, we like to cook together – from scratch – so there's quite a lot of prep involved. I find that quite relaxing too.

### On my bedside table is

An alarm clock and a drink – just the essentials!

### The last thing I do each day is

At about 10:00pm I go out around the garden and water all the plants. We've got a few new trees and some veg that we're growing, so we try to make sure they're watered before we go to bed.

### I'm normally in bed by

About 10:30 pm

# Hello

Well yes, it is the back page but if you're here then we're guessing that you, like us, have a genuine interest in renewables, so **hello and welcome** to Midsummer.



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