

HEAT PUMPS & RENEWABLES

HEATING | SOLAR | STORAGE | EV

OCTOBER 2026



Five questions to ask before selecting a module

Turn to page 16 for the full story



STORAGE

How installers can unlock new revenue
through commercial storage retrofits

Page 30



HEAT PUMPS

Why wiring centres are becoming the
brain of modern heat pump systems

Page 34



EV

Connected, compromised. Protecting
electric vehicle charging systems

Page 52

Specified by HVACR
designers, trusted by
leading manufacturers



Advanced Thermal
Fluids



Performance Enhancing
Additives



Conditioners, Cleansers &
Inhibitors



Thermodynamic Optimisation
Services

 **Hydratech**

Get in touch with the experts today

info@hydratech.co.uk

| 01792 586800

| www.hydratech.co.uk

Welcome to the October issue of Heat Pumps & Renewables Journal

Iwould like to begin by thanking everyone who has shared such positive feedback on our inaugural issue. The response has been extremely encouraging and reflects the continued growth and evolution of the renewables marketplace.

The sector is progressing at an impressive pace, demonstrated by the introduction of new products, the increasing number of installations and the growing integration of technologies that have traditionally operated independently. While solar, energy storage, heat pumps and electric vehicles each retain their own distinct roles, it is becoming increasingly evident, particularly within the domestic market, that these technologies are working together to deliver more integrated and efficient energy solutions.

Our refreshed publication continues to evolve in response to the changing needs of the market, informed by extensive consultation with readers, advertisers and industry partners. The result is a revitalised magazine featuring an expanded editorial scope, enhanced content and a contemporary visual identity that reflects the direction of this rapidly developing industry.

Investment

Building on our recent investment in the printed Journal, I am pleased to confirm that we now offer an enhanced 64-page publication, produced 10 times a year in both print and digital formats, reaching more than 15,000 installers and specifiers across the sector.

I am also delighted to announce that our brand-new website is scheduled to launch in November, providing an enhanced digital experience for

our readers and industry partners. Further details, including the official launch date, will be announced through our weekly e-newsletter.

To subscribe, visit:

www.renewableenergyinstaller.co.uk

What's Inside

This issue brings together an extensive selection of informative, thought-provoking and practical content covering the wider renewable energy landscape. From expert technical insights and industry developments to inspiring projects and emerging technologies, here's an selection of what you can expect.

- **Thought Piece:** A look at the UK's transition towards renewable energy and the growing demand for more flexible energy solutions. His contribution also explores the future of the Future Homes Standard.
- **Solar:** We visit Brixham Fish Market, where we are told about how a successful initial installation has paved the way for a further 119 solar panels. The second phase brings the two-stage project to a total of 423 panels, delivering a combined capacity of 251kWp.
- **Energy Storage:** A look into how installers can unlock additional revenue opportunities through commercial battery storage retrofits.
- **Heat Pumps:** We hear why contractors, specifiers and installers should consider evaluating key factors when selecting R290 heat pumps.
- **The Golden Triangle:** We also hear from a Council, which shares how futureproofing homes and upgrading heating systems across more than 300 properties is delivering benefits for households throughout the region.

• **Electric Vehicles:** A discussion on the electrification of transport which is creating new opportunities and challenges across the renewable energy sector.

• **Training and Skills Development:** We hear about the launch of Aberdeen's first Power Academy, demonstrating the continued commitment to developing the next generation of talent across the power sector.

Events: National ACR & Heat Pump Awards – Entries now open

Entries are now open, bringing together industry leaders, manufacturers, contractors, consultants and innovators from across the HVACR and renewables sectors.

Taking place at The Midland Hotel, Manchester, on 3 March 2027, the awards will recognise the outstanding achievements, innovation and excellence that continue to shape and advance our industry.

For full details and to enter, visit:
www.acrjournal.uk/national-acr-heat-pump-awards

Finally, my sincere thanks to the entire HPR team, and particularly to David Crowson, Digital Editor, for their invaluable support and contribution in bringing this latest issue together.

I hope you enjoy reading it.

Juliet

Juliet Loiselle FinstR,
Editor/Publisher



JOIN US IN CELEBRATING THE NEXT GENERATION OF INDUSTRY STARS ON 3rd DECEMBER 2026!

HEADLINE SPONSOR

THANK YOU TO OUR SPONSORS

Leeds Marriott Hotel

4 Trevelyan Square, Boar Lane, Leeds LS1 6ET

BIG AQUAREA T-CAP M SERIES



The new Big Aquarea M Series offers a flexible, compact and energy-efficient solution for central heating and/or domestic hot water installations in multi-family or commercial buildings.

Suitable for both new build and retrofit applications, the solution reaches water outlet temperatures of up to 75 °C and offers a more sustainable alternative to traditional fossil fuel heating systems.

- Easy integration with existing hydronic systems such as fan coils, floor heating or domestic hot water tanks.
- Flexible control options: remote control only or control module for enhanced functionality and seamless Modbus integration
- Panasonic Compressor

300
kW

Capacities 20-30 kW,
up to 300kW in
cascade



Compact solution
with small footprint

55 °C

Keeping capacity at
55 °C water outlet
down to -15 °C outdoor



R290



aircon.panasonic.eu

Contents

October 2026

NEWS

- 06** We highlight what's been happening in the Heat Pumps and Renewables sector
- 10** HPA UK – A look at the Annual Conference which will focus on turning the UK's heat pump ambitions into practical delivery, covering policy, infrastructure, skills, standards and finance

ADVERTORIAL

- 14** EcoFlow – Company profile
- 43** Mounting an Air Source Heat Pump – answers to some frequently asked questions
- 62** Everything you need to know about diversifying into heat pumps

FEATURES

- 12** Battery Energy Storage Systems (BESS) – a look at how they can help organisations store clean, low-cost electricity

SOLAR

- 16** Module technology – five important questions to ask when evaluating module options
- 20** Case Study - Britain's most valuable fish market is adding another 119 solar panels
- 22** Photovoltaic installations – AC off doesn't mean DC dead, why safe solar PV isolation starts with understanding the risks you can't simply switch off
- 24** Future Homes Standard - a look at what the new solar requirements mean and why apartment buildings must not be left behind
- 26** Solar thermal - recent investment in the sector highlights its growing role alongside heat pumps and other renewable technologies

SOLAR & STORAGE

- 28** Organised theft - the need for smarter, proactive security measures to protect assets, minimise downtime and reduce costs

STORAGE

- 30** Commercial storage - how "legacy" solar installers can expand into the space and take advantage of a rapidly growing retrofit market
- 32** One of Europe's largest battery energy storage facilities - scheduled to begin commercial operations by the end of 2027

HEAT PUMPS

- 34** Organised control hub – as sophisticated systems heat pumps need to be managed as a whole
- 36** R290 - what contractors, specifiers and installers should consider when evaluating these heat pumps
- 38** Air Source Heat Pumps - why early engagement with manufacturers pays when retrofitting these heat pumps
- 40** High Temperature Heat Pumps - how they could store electricity as underground heat and later convert it back into power.

GOLDEN TRIANGLE

- 44** Real savings – batteries are an important addition to solar panels, especially for homes with heat pumps, helping households store excess solar energy and reduce electricity costs

- 46** Future proofing homes - a transformative project to upgrade the heating systems in more than 300 of North Kesteven District Council (NKDC) properties
- 48** An installer's journey - moving into heat pumps after specialising in solar PV and battery storage.

EV

- 50** Renewable transport technology - transforming the cold supply chain
- 52** Cybersecurity risks - increasing as charging networks become more connected

TRAINING

- 54** People power - developing skills for a changing industry
- 56** Changing energy landscape – the challenges it poses to the training industry
- 58** Skills investment – renewables are reshaping the building services sector, but installers need sustained demand and policy certainty to build confidence in investing in skills
- 60** The launch of a new Power Academy in Aberdeen - creating Scotland's first independent training provider-led facility

WHAT'S NEW

- 61** What's new in the Heat Pumps and Renewables sector



HEAT PUMPS & RENEWABLES

Publishing Editor

Juliet Loisselle CompCIPHE/FInstR
01778 391067
julietl@warnersgroup.co.uk

Digital Editor

David Crowson
01778 391067
david.crowson@warnersgroup.co.uk

Multimedia Sales Manager & Events

Grace Darrow
01778 395029
grace.darrow@warnersgroup.co.uk

Design

Development Design

Production

Viv Lane
01778 392453
production@warnersgroup.co.uk

Published by

Warners Group Publications Plc
1 Lysander Dr, Market Deeping,
Peterborough PE6 8FB
01778 392000 / 01778 394748
www.warnersgroup.co.uk
© Copyright 2026

Printed by

S&G
STEPHENS & GEORGE
PRINT GROUP

NEWS



The Collective Voice of UK Real Estate

New data shows untapped commercial real estate solar capacity

A significant new report, commissioned by Real Estate: UK, has found that the UK's untapped commercial rooftops could become a major new source of solar energy generation with enough output to match that of 20 Hinkley Point C nuclear power stations. This, if utilised correctly, could massively increase UK renewable energy production, fast-track the UK's path to net zero, improve national energy security, reduce the need for solar deployment on agricultural land, and drastically reduce energy costs for occupiers amid ongoing energy price uncertainty.

The report, which draws on data and respondents from 70 real estate organisations with a combined AUM of over £500bn, has found that less than 10% of suitable commercial building roofspace has been utilised for solar generation to date, providing just 3-5GW of solar capacity. While solar technology is widely championed in principle, its deployment remains significantly below its technical potential, particularly across the industrial and logistics real estate sector.

Unlocking the remaining 90% could provide a vast new source of home-grown renewable generation, with the potential for more than 60 gigawatts (GW) of untapped solar capacity to be harnessed across UK commercial real estate. It would also significantly reduce energy costs for occupiers and create additional revenue streams for landlords whilst rapidly decarbonising the UK's built environment, which currently emits 25% of the UK's greenhouse gas emissions.

Visit a Grant Heat Pump' workshops for homeowners

Grant UK is opening the doors of its purpose-built heat pump training facility at its Training Academy in Swindon, Wiltshire, and welcoming homeowners to attend 'Visit a Grant Heat Pump' workshops in partnership with Nesta. Homeowners will be able to see Grant air source heat pumps in action and speak to members of the team to learn more about this low-carbon heating technology.

While brochures and online resources can help prospective heat pump owners learn more about this technology, seeing the product installed and in person can help homeowners decide whether it is right for them.

The workshop sessions are specifically for homeowners who are considering an air source heat pump for their property.

Each session will be approximately one hour in duration and attendees will be able to see a range of different heat pumps models, from smaller single fan units up to larger double fan heat pumps. Homeowners will be able to learn more about how air source heat pumps work by watching a demonstration of a working heat pump.

Events are scheduled in October and December with more workshops planned for early 2027 as well. Each session is free to attend.



Homeowners can book onto an upcoming event by visiting:
<https://app.visitaheatpump.com/hosts/1757>

To read this interesting story in full visit:
<https://tinyurl.com/46fsn7d2>

REAL welcomes plug-in solar and urges consumers to buy safely

Renewable Energy Assurance Ltd (REAL) welcomes the Government's new regulatory framework for plug-in solar systems, helping more households access affordable renewable energy whilst maintaining important consumer safeguards.

Plug-in solar, sometimes referred to as balcony solar, will allow eligible households to generate their own electricity using specially designed plug-in solar products that meet new safety requirements. Initially, the products will be limited to solar-only systems, with battery-integrated products remaining outside the scope of the framework whilst further evidence is gathered.

Whilst plug-in solar is now legal, it is important that consumers have clear information so they can make informed purchasing decisions and use these products safely.

REAL looks forward to working with Government, industry and consumer organisations to support the safe introduction of plug-in solar and to help consumers make informed choices now this exciting new technology is available.

www.realschemes.org.uk



Great British Energy makes its first major solar investment

Great British Energy and Barclays Climate Ventures have announced a combined £8.875 million investment in Naked Energy, a British renewable-heat technology company, closing their £27m Series B financing.

The investment will support Naked Energy's plans to establish a new UK-based automated manufacturing facility, bringing production in-house, reducing unit costs and supporting the next phase of commercial scale-up. The facility will create up to 40 direct skilled manufacturing jobs and around 100 indirect roles.

This is Great British Energy's first solar supply chain investment and signals its continued commitment to deploying public capital behind British SMEs developing the technologies needed to address some of the hardest challenges of the energy transition.

To read more visit:
<https://tinyurl.com/mjatcnsr>



Former Dimplex Head of Renewables joins Go Geothermal and CTC UK in 'full circle' move

Go Geothermal and CTC UK has appointed **Mark Burton**, former Head of Renewables at Dimplex, as Sales & Strategy Director, based at its Retford office.

The move marks a return to CTC, where Mark first worked with the premium Swedish made heat pump brand, between 2013 and 2015. During that period he acted as a full solutions provider, advising on the ancillary parts and additional components needed to get ground source heat pump projects off the ground.

From there, Mark spent ten years at Vaillant, working first as Renewables Business Manager. Supporting housebuilding specification, national and regional new build developers plus retrofit MCS installations with also social housing providers in tackling fuel poverty. Latterly holding a position as National Partnership Manager being responsible for transitioning some of the UK's leading supermarket chains to heat pump technology, - including work alongside utility companies such as OVO and E.on.

Mark then moved to Dimplex, where he led the expansion of the renewables team. His focus spanned heat networks and 5th generation heat network apartment systems, as well as commercial heat pumps for heating and cooling solutions.

Mark's move from Dimplex to Go Geothermal and CTC UK brings a wealth of large-brand experience to the business, along with an in-depth understanding of the wider UK heat pump manufacturing landscape.

<https://gogeothermal.co.uk/>

Mark Burton, Sales & Strategy Director at Go Geothermal and CTC UK





UK renewable energy installer announces strategic partnership to advance battery energy storage solutions

Excel Energy, has announced a strategic partnership with global battery innovator Sigenergy to improve how UK businesses store and use surplus solar energy. The collaboration, which began in April 2026, aims to support the deployment of more efficient energy storage systems that help organisations reduce operational energy costs and progress towards net zero targets.

The partnership focuses on enabling businesses to capture excess solar generation and deploy it during peak demand periods, overnight usage, or when grid reliance would otherwise be higher. This approach supports more efficient use of

on-site renewable generation and improved overall energy management.

By integrating advanced battery storage technology with commercial solar installations, the collaboration is intended to enhance energy resilience for businesses while reducing dependence on grid-supplied electricity. It also supports wider adoption of renewable energy by improving the practicality and flexibility of solar power use.

Through this partnership, Excel Energy and Sigenergy aim to support the wider adoption of energy storage technology and help businesses accelerate their transition to lower-carbon operations.

To read the story in full visit: <https://tinyurl.com/485xkfpu>



John Stamford, Managing Director of Andersen EV

Andersen EV appoints John Stamford as Managing Director

The appointment strengthens Andersen's leadership team as it enters its next phase of expansion, following increased sales over the past nine months and a threefold increase in production capacity at its headquarters and manufacturing site in Stewartby.

Reporting to Chief Executive **David Martell**, Stamford will lead day-to-day operations and the execution of Andersen's growth strategy. His remit includes scaling manufacturing and operational capability, advancing the company's product and technology roadmap, and strengthening its nationwide installation and customer-service operations.

Stamford brings more than 30 years of engineering and leadership experience spanning high-volume electronics manufacturing, automotive electrification and advanced powertrain technologies.

Andersen-EV@PFPR.com

Test for 'GB Grid' will be delivering growth and lower bills

Solar Energy UK

The solar industry has welcomed the Government's plan to fix long waiting times and huge costs for connecting to the grid through public investment.

"You would not believe how many businesses complain to me that they can't get going because they can't get connected to the grid. It pushes costs up, it drags growth down and it holds Britain back," said Prime Minister **Andy Burnham** in his keynote speech to the Labour Party conference¹.

"We won't get the growth and inward investment we need if we don't fix it," he added.

It is a situation well appreciated by Solar Energy UK and its members, being the subject of repeated requests to the highest levels of Government for many years. Even after several reforms, waiting times to connect solar farms and commercial-scale installations alike can stretch far into the 2030s.

We are glad to see this mission-critical situation recognised publicly by the Prime Minister.

In response, he announced the creation of GB Grid, a new branch of GB Energy. "A publicly owned company that will challenge the private sector operators. It will increase competition, drive down costs and speed up connections so businesses can expand and grow more quickly," he said.

It will draw from the same funding pool as GB Energy, at least until the next spending review.

As part of the package, developers will be granted the right to build their own connections rather than waiting for grid operators to do so – another welcome decision that should accelerate deployment and lower costs. Long has Solar Energy UK sought direct public investment into reinforcing and expanding the grid. Similar reforms in Ireland have knocked 11 months off connection times, according to the Department for Energy Security and Net Zero.

Moreover, the Government will promote the competitive tendering of projects on the high-voltage transmission network, allowing GB Grid – and other companies – to deliver new infrastructure.

However, it should be stressed the nation's ageing infrastructure would still need significant updating and investment even without the urgent need to roll out cheap renewable generation.

Tax and levies

Separately, Energy Secretary **Miatta Fahnbulleh** has hinted that levies placed on bills will be transferred into general taxation². The MCS Foundation estimates that doing so would save the average household around £120 a year³.

The move would continue a trend started under Keir Starmer's administration and accelerated by Andy Burnham's decision to remove VAT from electricity bills, which he confirmed would apply from this Thursday^{4 & 5}.

Source

1. <https://labour.org.uk/updates/stories/labour-conference-2026-speeches/>
2. <https://www.theguardian.com/politics/2026/sep/28/green-transition-uk-taxpayers-energy-secretary-miatta-fahnbulleh>
3. <https://tinyurl.com/2e4jmaez>
4. <https://solarenergyuk.org/news/solar-industry-welcomes-legacy-subsidy-reform/>
5. <https://solarenergyuk.org/news/move-to-cut-energy-bills-praised-by-solar-industry/>

ACR & HEAT PUMP REGIONAL EXHIBITION

Book your **FREE** ticket here



GLASGOW

5th November 2026

The Village Hotel, 7 Festival Gate,
Pacific Dr, Glasgow G51 1DB

PLATINUM SPONSORS



GOLD SPONSORS



Panasonic
heating & cooling solutions



Supported by



HPA UK Annual Conference 2026:

Driving the heat pump market from ambition to delivery

The HPA UK Annual Conference will focus on turning the UK's heat pump ambitions into practical delivery, covering policy, infrastructure, skills, standards and finance. Key discussions will explore how to scale the market and reach 450,000 heat pumps a year by 2030.

Driving the heat pump market: From ambition to delivery is the theme for this year's HPA UK Annual Conference, bringing together policymakers, industry experts and representatives from across the energy sector to examine what is needed to turn the UK's heat decarbonisation ambitions into practical delivery.

Taking place at the Knowledge Centre, The British Library, on the 2nd of December, the conference comes at an important point for

the heat pump market, with conversations focusing on how the industry can build momentum and deliver at scale.

Following HPA UK's Annual General Meeting for members, the conference will open with a Ministerial Address from **Martin McCluskey**, Minister for Local Energy and Jobs.

The programme will explore some of the key conditions for market growth, including delivery of the Future Homes Standard, decarbonising commercial buildings, meeting the Warm Homes Plan target for heat networks and the role of local leadership in delivering heat decarbonisation.

With electrification of heat placing increasing demands on the energy system, **Faith Natukunda** of NESO will consider whether the grid can keep pace and examine the role of Regional Energy Strategic Plans. The conference will also address the evolving standards and permitting landscape, including the Heat Network Technical Assurance Scheme.

In the afternoon, **Laura Sandys CBE**, Chair of Electrify Industry, will join delegates for an in-conversation session, followed by a cross-sector discussion on decarbonising heat across domestic, commercial and industrial settings.

Paul Kenny of the European Heat Pump Association will provide the keynote before the conference closes with a panel focused on a major market ambition: 450,000 heat pumps a year by 2030. With contributions from HPA UK Installer Representative, the Green Finance Institute and Nesta, the session will consider what is needed to support the next stage of market growth.

From policy and infrastructure to standards, local delivery and market capacity, the conference will bring together the different pieces needed to move from ambition to delivery.

The day will conclude with closing remarks and a networking drinks reception. 🍷



Places are limited! Book your ticket today by visiting:

<https://tinyurl.com/ymzy8hx6>

Or scan the Conference registration QR code.

There are free and discounted tickets for HPA UK members.



CONFERENCE AGENDA		
Time	Session	Speakers
10:30 – 11:15	HPA UK AGM	HPA UK Chairs and Staff
11:30 – 11:40	Welcome Address	Charlotte Lee, Chief Executive
11:40–11:55	Ministerial Address	Martin McCluskey, Minister for Local Energy and Jobs
12:00–12:40	• Delivering the Future Homes Standard	• Ashley Southgate, UKPN; Alex Brooks, AES Sustainability Consultants
	• Decarbonising Commercial Buildings	• Iona Norton, NHS; Christine St Johncox, Energy Systems Catapult; Matthew Brickell, DESNZ; Dr James Richardson, CCC
	• Meeting the Warm Homes Plan target for heat networks	• Arran Mornin, DESNZ
12:40–13:20	• Delivering Heat Decarbonisation through Local Leadership	• Rory Matthews, GMCA; Jessica McNeill, WYCA; Natasha Valladares, GLA
	• Can the grid keep up? Heat electrification and the future energy system (Regional Energy Strategic Plans)	• Faith Natukunda, NESO
	• Understanding the Standards and Permitting Landscape	• Sallay Gallagher, Environment Agency; Chris Davidson, HPA UK; Phil Jones & Yasmin Burton, DESNZ
14:00–14:30	In Conversation with...	Laura Sandys CBE, Chair of Electrify Industry
14:30–15:15	Decarbonising Heat Across the Board	DESNZ representatives from domestic, commercial and industrial heat pump teams.
15:30–15:35	Keynote speaker	Paul Kenny, EHPA
15:45–16:25	Looking to 450,000 Heat Pumps a Year by 2030?	Damon Blakemore, Installer Representative; Ryan Jude, GFI; Madeleine Gabriel, Nesta
16:25 – 16:35	Closing remarks	HPA UK Chairs
16:35 – 18:00	Drinks reception	

The conference agenda maybe subject to change

ENTRIES NOW OPEN

NATIONAL ACR & HEAT PUMP AWARDS 2027

4th MARCH 2027

THE MIDLAND
16 PETER STREET, MANCHESTER, M60 2DS



THANK YOU TO OUR SPONSORS



Visit www.acrjournal.uk/information/national-acr-heat-pump-awards or email Hayley Comey on hayleyc@warnersgroup.co.uk to find out more



An introduction to 24/7 carbon-free energy from a corporate perspective

Riccardo Zara, Director of Sustainability at chapman&sp, discusses the UK's shift to renewable energy which is driving demand for flexible energy solutions. Battery Energy Storage Systems (BESS) can help organisations store clean, low-cost electricity, reducing carbon emissions, energy costs and grid reliance.

The UK's electricity system is entering a period of transformation as decarbonisation accelerates and renewable generation becomes the backbone of supply. At the same time, rising electricity demand driven by electrification of heat, transport and digital infrastructure is increasing pressure on an already constrained and increasingly intermittent grid. This shift brings with it a growing need for flexibility.

It is made clear within the UK Government's 2025 Clean Flexibility Roadmap that a flexible energy system is essential to maintaining reliability, reducing system costs as well as enabling a renewable's led grid. For organisations, this represents a fundamental change from passive consumers of electricity to active participants who can shape when energy is used, not just how much. This change presents an opportunity to drive both carbon reduction and improve commercial performance.

The Roadmap outlines how consumer led flexibility will scale rapidly, driven by stronger price signals and planning reforms that encourage demand to move away from peak and high carbon periods. Not only does this provide businesses with greater access to flexible tariffs, but new commercial models that reward shifting consumption to cleaner and lower cost hours. In practice, organisations will be able to reduce energy spending and improve emissions by aligning their operations with the real time grid conditions.

24/7 carbon free energy

Battery Energy Storage Systems (BESS) are emerging as a critical enabler of this transition, as they provide 24/7 carbon free energy. By storing electricity during periods of high renewable output and low system demand, then discharging during higher carbon or higher price hours, BESS provides a controllable source of clean power. This strengthens an organisation's ability to match demand with cleaner grid conditions, which in turn reduces



Riccardo Zara, Director of Sustainability at chapman&sp

Scope 2 emissions. BESS will also allow organisations to enhance cost control and operational resilience, ensuring the business has continuity and stability if disruptions occur.

Functioning as the flexibility layer between intermittent renewable generation and fixed or semi-fixed building loads, BESS reduces exposure to carbon intensive peak periods. It supports load shifting without relying solely on changes to occupancy patterns or operational schedules. When integrated with metering and advanced energy management platforms, battery storage enables data driven optimisation and prepares organisations for evolving regulatory expectations around transparency and real time reporting.



With relatively simple and cost-neutral design adjustments, most buildings could be enabled to flex their energy demands in response to external signals. This could include the incorporation of thermal storage within heating and cooling systems, allowing energy to be stored and released at optimal times, as well as the implementation of an advanced Building Management System (BMS). Most modern buildings already include a robust control strategy, and this can be extended to enable demand response functionality, such as load shifting, peak shaving, and automated response to time-of-use tariffs or carbon signals.

Storing at low cost

As electricity prices become increasingly influenced by renewable energy availability, battery systems can allow buildings to store low-cost, low-carbon electricity and use it during peak periods. Subject to the energy tariff structure agreed, this approach could offer attractive financial returns, with potential payback periods in the order of five to seven years. Additionally, emerging sustainability frameworks, including BREEAM New Construction Version 7, are increasingly recognising the value of energy flexibility.

A confidential client chapmanbdsp is supporting demonstrates how this can work in practice. Their strategy recognises that the next phase of corporate energy leadership must move beyond broad annualised claims of “100% renewable electricity” and towards hourly matching of demand with clean generation. By integrating BESS across a growing share of their UK operations, they plan to use detailed data to reduce greenwashing and unlock new operational and financial value. The client aims to power all of its offices with more than 90% carbon-free electricity by 2030, and their approach acknowledges system constraint, positioning real time matching not as a target, but as a commercial commitment.

The strategic ambition is to enable hour by hour matching of office electricity consumption with renewable generation, reducing reliance on traditional tariffs. Companies need to adopt a deeper focus on understanding and shaping when electricity is consumed as opposed to how much. Emerging technologies such as BESS will be central to improving emissions, as the UK transitions to a cleaner, more dynamic energy system. ☁

www.chapmanbdsp.com



TRIANCO

Renewable & Electric Heating Specialists



ACTIVAIR R290 INDOOR HEAT PUMP

3.2kW Wall Hung



Ideal for properties with limited space to site an outdoor unit

Optimised air ducts to the outside air

Built in leak detector for safety

Remote diagnostics and monitoring via built in SIM

5kW Floor Standing



TRIANCO
BRINGING HEAT TO LIFE



EcoFlow: One of the UK's Fastest-Growing Energy Brands

Interview with **Craig Bilboe**, EcoFlow Head of Residential – Solar & Storage Live.



Craig Bilboe, EcoFlow Head of Residential –
Solar & Storage Live

EcoFlow has grown rapidly in the UK over the past few years. How would you describe the company's position in the market today?

The pace of growth has been extraordinary. EcoFlow has become one of the fastest-growing brands in the UK energy market, and what's particularly exciting is that we're now seeing that growth across several different parts of the business.

A lot of people originally knew EcoFlow for portable power. We built a very strong consumer brand there, but today our proposition is much broader. We're increasingly established in residential energy, with solutions such as OCEAN and STREAM, and we're now expanding further into commercial and industrial energy storage.

For us, the opportunity is about connecting those different areas. Energy needs are changing at every level, from someone wanting to reduce their household electricity bill to an installer delivering a whole-home system, or a business looking for greater control over its energy costs.

The UK is an incredibly important market for EcoFlow, and the growth we've seen gives us confidence that we're building something with real longevity here.

"I think one of our biggest strengths is that we look at the whole energy ecosystem."

You've also been building the EcoFlow team locally. How important has that been to the company's development?

It's fundamental.

If you want to build a serious, long-term energy business in the UK, you need people on the ground who understand the market. That means understanding customers, but also installers, distributors, retailers, regulations and the wider energy landscape.

We've been steadily developing our UK operation and bringing more expertise into the business. For me, that local presence is particularly important as we move deeper into residential and C&I energy.

These aren't markets where you simply launch a product and walk away. Our partners need to know that EcoFlow is here to support them, whether that's through training, technical support, product development or helping them understand where our technology fits within the changing UK energy market.

My role has developed alongside that. A huge part of my focus is making sure we're not just bringing global EcoFlow products into Britain, but building a UK business around them.

We're speaking at Solar & Storage Live. What are the big EcoFlow highlights at the show this year?

There's a lot to see on the stand!

OCEAN 2 is obviously a major focus for us. It represents the next generation of our residential energy storage offering, and we've put a huge amount of emphasis into the areas that matter to both homeowners and installers: flexibility, reliability, safety and ease of installation.

We're also showcasing our new 8kW battery solution, which is an important

addition to the portfolio and gives installers greater flexibility when they're designing systems around different properties and energy requirements.

One of the most exciting developments, though, is our move further into C&I. It's a natural progression for EcoFlow. Businesses are facing many of the same challenges as households – volatile energy costs, increasing electrification and a desire for greater energy independence – just at a completely different scale.

For installers and partners visiting Solar & Storage Live, I think the breadth of the portfolio is becoming increasingly important. We don't believe energy storage should be one-size-fits-all. A small home, a large detached property and a commercial site clearly have very different requirements. Our job is to develop technology that can address those different use cases.

How important are installers to EcoFlow's plans in the UK?

Absolutely critical.

As our residential energy business has grown, our relationship with installers has become increasingly important. They're the people speaking to customers every day, seeing the challenges of different properties and understanding what homeowners are actually asking for.

That feedback is incredibly valuable to us.

We want to make products that are technically strong, but they also have to work in the real world. Installation time, commissioning, system flexibility, aftersales support and reliability all matter enormously.

Events like Solar & Storage Live give us the opportunity to have those conversations

ECOFLOW



ECOFLOW

directly. We can demonstrate the technology, answer technical questions and, importantly, listen. Some of the most useful conversations we have at these shows are about what installers want us to do next.

There are now a lot of companies competing in battery storage. What differentiates EcoFlow?

I think one of our biggest strengths is that we look at the whole energy ecosystem.

We're not approaching energy storage as a single box on the wall. We're thinking about generation, storage, consumption, intelligent energy management and how all of those elements interact.

Software is becoming increasingly important within that. As households and businesses adopt solar, batteries, EVs, heat pumps and dynamic tariffs, simply storing electricity isn't enough. The system needs to understand when it makes sense to generate, store, consume or export energy.

That combination of hardware, software and energy management is where EcoFlow can bring something particularly strong to the market.

At the same time, we've built a brand that

consumers already recognise. That gives us an interesting position because we can combine consumer-focused product design and usability with increasingly sophisticated residential and commercial energy technology.

What does EcoFlow's growth tell you about the future of the UK market?

I think we're still relatively early in the transition.

Energy is becoming much more visible to consumers and businesses. People are thinking about where their electricity comes from, how much it costs, when they use it and whether they can generate or store more of it themselves.

Battery storage will be a major part of that shift, particularly as solar, EVs and electrification continue to grow.

But the industry also has to make that transition accessible. Not every customer has the same home, the same budget or the same energy requirements. We need different routes into energy storage rather than expecting one solution to work for everybody.

GET IN CONTACT:
<https://energy.ecoflow.com/uk>

That's a big part of EcoFlow's strategy.

Finally, what should the industry expect next from EcoFlow in the UK?

Continued investment.

We're not looking at the UK as a short-term opportunity. We're building the team, expanding the product portfolio, strengthening our installer and partner network and investing in the infrastructure needed to support customers properly.

You'll see us continue to develop across residential energy, while C&I will become an increasingly important part of the business.

Ultimately, we want EcoFlow to be here for the full energy journey – from someone taking their first step into solar and storage through to sophisticated whole-home and commercial energy systems.

The technology will continue to evolve very quickly. Our commitment is to evolve with it, while building the local expertise and partnerships that make EcoFlow a long-term part of the UK energy market. ☺

Five questions to ask before selecting a module

Ignacio Espinosa, Head of EU Technical Team at JA (formerly JA Solar), outlines five important questions to ask when evaluating module options.

Solar module technology is evolving rapidly, with advances in technologies, design and manufacturing processes reshaping the market. For EPCs, installers, developers and IPPs, this increasing choice makes selecting the right module more important than ever, requiring a deeper understanding of how different solutions perform in real-world conditions and deliver long-term value.

For much of the past decade, solar modules were treated as interchangeable commodities, as intense global competition and oversupply drove prices down. However, this is now beginning to change. Manufacturers are adjusting production levels and placing greater focus on developing premium, higher-efficiency modules. Together with continued demand growth, these changes are creating a more balanced pricing environment and signalling a maturing market where differentiation is becoming increasingly important.



Ignacio Espinosa, Head of EU Technical Team at JA (formerly JA Solar)

As the industry moves beyond commoditisation, the way solar modules are evaluated and selected is also evolving. While cost remains an important consideration, greater emphasis is now being placed on performance, reliability and long-term value. Understanding the differences between module technologies, designs, supply chains and manufacturing partners is therefore essential to selecting the right solution for each site and project.

The following five questions provide a framework for evaluating solar module options and identifying the solutions best suited to specific project requirements.

1 Which module technology best matches the project requirements?

Over the past decade, the biggest shift in the module market has been the rise of TOPCon (Tunnel Oxide Passivated Contact) technology. TOPCon has quickly established itself as the dominant module architecture, with analysts projecting that N-type TOPCon modules will account for almost 55% of global installations in 2026, reflecting both its scalability and ongoing innovation.

The reasons for this rapid adoption are clear. Compared with traditional PERC modules, TOPCon modules offer higher conversion efficiency, improved temperature coefficients and stronger long-term stability, making them the preferred choice for high-yield, durable installations. In addition, as adoption has grown, manufacturers have been able to scale production, which in turn has helped reduce costs, making TOPCon modules an increasingly accessible option for projects of all sizes.

As competition in the TOPCon module market intensifies, manufacturers are focused on refining production techniques to extract further gains by reducing optical and electrical losses. One of the most effective approaches is cell cutting. By dividing the cell into multiple sections, resistive losses are reduced and energy yield is improved, giving modules higher overall efficiency. This approach also enables more flexible busbar layouts. However, each cut compromises mechanical strength and increases the risk of microcracks during installation and operation. A three-cut configuration is therefore emerging as the optimal balance, enhancing performance while maintaining durability.

Some manufacturers are also introducing patented innovations such as gapless flexible





Double-glass construction can also provide enhanced protection against moisture ingress and improved durability.

The right choice is therefore not about selecting the latest technology, but about matching module design to the specific characteristics of each project.

3 How will the module perform in challenging environments?

Solar modules are increasingly being deployed in a range of challenging environments, from coastal regions and deserts to cold and snowy climates. To ensure reliable long-term performance, it is important to select a module with a construction suited to the specific conditions of each installation site.

In high-humidity regions, such as coastal areas of southern Europe, double-glass modules offer advantages due to their resistance to moisture ingress and hydrolytic degradation, especially compared with modules that use polymer backsheets. The latest generation of TOPCon modules also benefit from ongoing advances in cell architecture that deliver improved performance alongside lower temperature coefficients to help minimise energy losses in hot climates.

In hail-prone areas, mechanical strength is a critical consideration. While traditional approaches favour monofacial single-glass modules, advances in design mean some double-glass modules can now deliver comparable impact resistance while retaining the durability advantages of glass-glass construction. ☺

interconnection, which can further improve efficiency compared to standard TOPCon values. This innovation also achieves a full-screen appearance, supporting full-black designs that are increasingly valued in residential markets.

While TOPCon currently dominates the module market, back-contact (BC) technology is also gaining attention, particularly in premium residential and commercial projects.

By moving electrical contacts to the rear of the cell, BC modules reduce front-side shading losses and improve light capture. This makes them particularly attractive for installations where space is limited or where partial shading from obstacles such as chimneys or trees can affect generation. Their clean, all-black appearance also makes them appealing where aesthetics are a priority.

As manufacturing capacity expands and production techniques continue to evolve, BC technology is becoming an increasingly viable commercial option. While it currently commands a premium over advanced TOPCon modules, ongoing improvements in manufacturing efficiency and wider market adoption are expected to narrow the cost gap over time. For many projects, the performance gains may justify the additional investment, particularly where space is constrained or aesthetics are a key consideration.

2 Monofacial or bifacial: Which is the best module for my project?

The choice between monofacial and bifacial modules is an important one in solar system design; however, the decision is no longer as straightforward as it once was. While bifacial modules initially saw rapid adoption,

especially in utility-scale installations, nowadays selection is driven by the specific characteristics and requirements of each site rather than a default preference for one technology over the other.

Bifacial modules capture additional light from the rear of the module, using reflected sunlight from nearby surfaces to increase energy generation. This makes them particularly beneficial in installations built on reflective surfaces. However, in many residential rooftop applications, surfaces such as dark roof tiles provide limited reflectivity, meaning the additional energy gain may be reduced.

In these situations, monofacial modules can provide more consistent and predictable performance, particularly when combined with design features such as white rear encapsulants to improve internal reflection.





Cold and snowy regions present different challenges, including thermal cycling and mechanical stress. Standard IEC testing provides an important baseline, but additional validation and real-world field testing can provide further confidence in long-term performance.

Desert and semi-arid environments require protection against dust, sand abrasion, high temperatures and intense UV exposure. Features such as advanced coatings, improved thermal management and enhanced mechanical testing can all contribute to maintaining performance in these environments.

When assessing modules for use in extreme environments, it is advisable to look beyond standard certifications. For example, some modules designed for high-humidity environments undergo additional qualification testing beyond the baseline requirements of IEC 61215 and IEC 61730, including extended protocols such as up to 3,000 hours of damp heat exposure, 30 humidity-freeze cycles and sequential stress testing. Similarly, some modules designed for desert and semi-arid environments provide additional validation for factors such as UV exposure, thermal cycling and sand abrasion.

These additional tests can provide greater confidence in a module's long-term durability under challenging environmental conditions.

4 Does the module meet evolving safety expectations?

Safety has always been a fundamental requirement for solar modules, but expectations are continuing to evolve.

The industry has long relied on IEC 61730, which assesses intrinsic product safety, electrical design integrity and basic fire behaviour classifications at the module level. While this certification is essential, it is primarily focused

on component-level laboratory testing and does not fully replicate how a module may perform during a real fire scenario.

As a result, some manufacturers also undertake additional fire performance assessments, such as the Euroclass standard EN 13501-1. This evaluates how materials behave under building-fire conditions, including their contribution to fire development, smoke production and the generation of flaming droplets or particles.

This broader perspective is important to ensure long-term project safety and compliance. Modules achieving a Euroclass rating such as B s1, d0 demonstrate very limited fire contribution, minimal smoke generation and no flaming droplets – factors that directly influence permitting, insurance acceptance and building owner confidence.

5 Can the supply chain behind the module be trusted?

The way solar modules are manufactured is becoming an increasingly important factor in procurement decisions. Across the industry, IPPs, developers, EPCs and installers face growing pressure to demonstrate ethical sourcing. This includes ensuring supply chains are free from forced labour and that materials can be traced throughout the manufacturing process.

At the same time, ESG targets are driving demand for more sustainable manufacturing practices, including the use of recycled materials and new production methods that reduce the amount of embodied carbon in solar modules.

To navigate these requirements effectively, it is important to work with suppliers that provide full, third-party verified lifecycle analyses, covering every stage of the value chain. While demand for this level of transparency may not yet be universal, in many markets traceable supply chains and documented carbon footprints are quickly becoming essential for securing approvals, meeting ESG targets and building trust with partners.

Conclusion: Choosing the right module requires a bigger picture

Solar modules are no longer interchangeable commodities. With rapid technological development and increasing project complexity, selecting the right module requires a broader understanding of performance, design, reliability, safety and sustainability.

For anyone involved in the selection or procurement of solar modules, the key question is no longer simply which module offers the lowest price. Instead, it is which combination of technology, construction and supplier will deliver the greatest long-term value for a specific application.

By taking a more strategic approach to module selection and partnering with manufacturers that combine proven technology, rigorous testing and transparent supply chains, solar teams can deliver systems that perform reliably today and remain resilient for decades to come. ☺

www.jasolar.eu/en



The **ACR** & **HEAT PUMP** **Trainee** Of The Year **Awards**

IN
ASSOCIATION WITH
 **R.A.C.E.S**
REFRIGERATION & AIR CONDITIONING
ENGINEERS SOCIETY

2026

Leeds Marriott Hotel

4 Trevelyan Square,
Boar Lane, Leeds LS1 6ET



**HEADLINE
SPONSOR**



THANK YOU TO OUR SPONSORS



**JOIN US IN CELEBRATING THE NEXT GENERATION
OF INDUSTRY STARS ON
3rd DECEMBER 2026!**

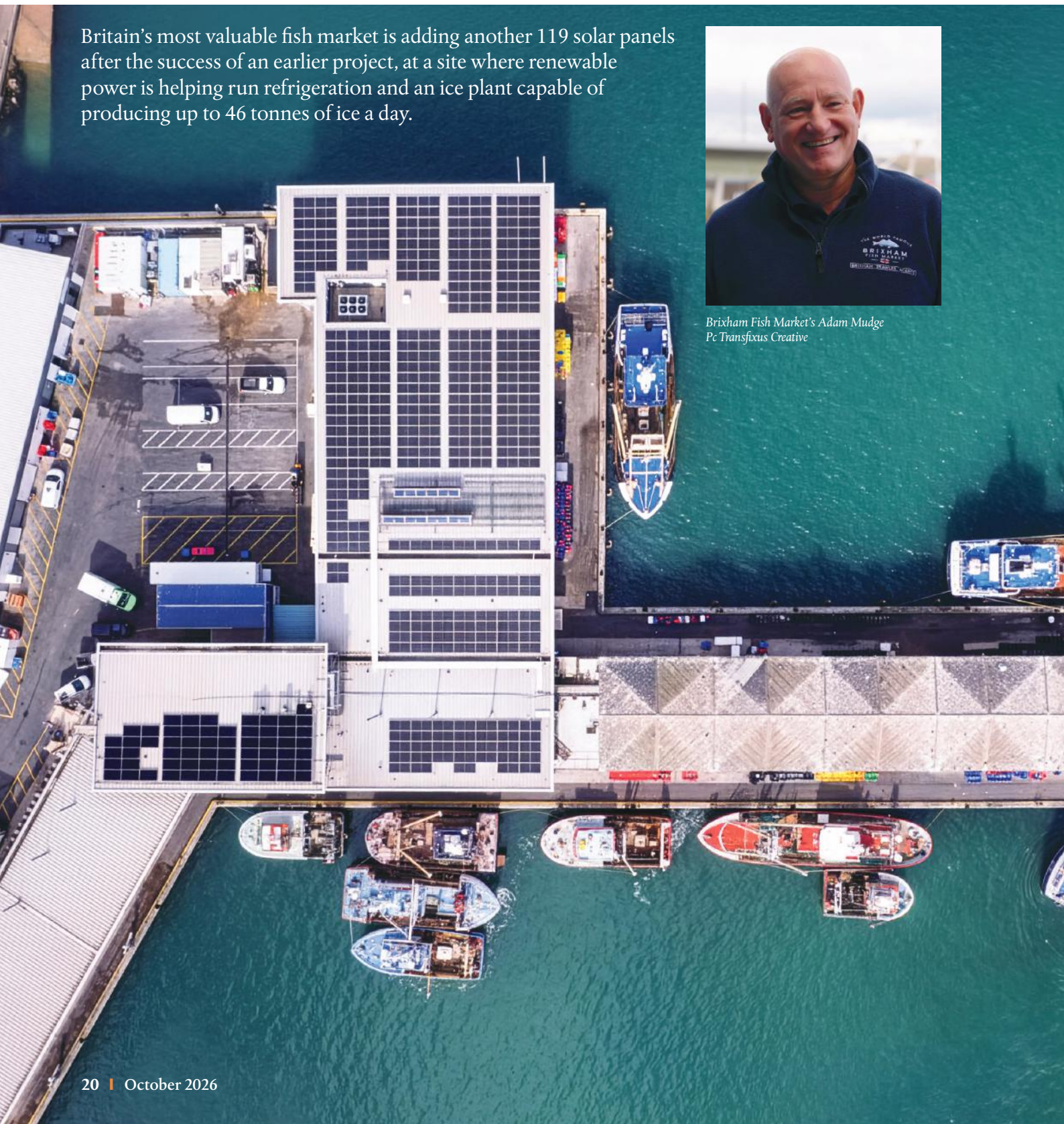


“Back for more!” – Brixham Fish Market adds another 119 solar panels after first installation goes swimmingly

Britain's most valuable fish market is adding another 119 solar panels after the success of an earlier project, at a site where renewable power is helping run refrigeration and an ice plant capable of producing up to 46 tonnes of ice a day.



Brixham Fish Market's Adam Mudge
Pc Transfixus Creative





Installing the solar panels Pc Transfixus Creative

“Solar saves us money. So adding more panels was a straightforward decision.”



A birds eye view of the fish market and harbour Pc Transfixus Creative

The new system, delivered by Totnes-based Bloom Renewables, will take Bloom’s two-stage installation at Brixham Fish Market to 423 panels and 251kWp. Together, the two stages are expected to generate around 236,000 kWh of electricity a year, save the market roughly £47,000 annually on energy bills and avoid around 60 tonnes of carbon emissions a year.

The expansion follows a first-stage installation of 304 panels, which Bloom estimates will generate around 173,000 kWh annually and save approximately £33,000 a year, with a projected payback period of three years and five months. Stage two adds 119 panels, with predicted annual generation of 63,000 kWh and annual savings of around £14,000.

Brixham fish market is already the most valuable in the UK, with around £77 million worth of fish landed and sold in 2025. Its success supports hundreds of jobs across fishing, processing, logistics, supply and other local businesses.

For Finance Director **Adam Mudge**, the solar is a practical response to the huge amount of energy required to keep a modern fish market running.

“We use a lot of electricity here, from refrigeration to an ice plant that can produce up to 46 tonnes a day. Solar helps us bring down the cost of keeping the fish cold and the market running. It’s a big help,” said Adam.

The main ice plant can produce up to 36 tonnes of ice a day, rising to 46 tonnes when additional machines are included. The ice

is used primarily by fishermen and fishing vessels, as well as fish buyers, to keep catches fresh and maintain quality.

For Adam, the financial case for stage two was simple: “Solar saves us money. So adding more panels was a straightforward decision.”

“Bloom did a good job first time round, they knew the site and the existing system, so we were happy to work with them again.”

Mark Bloomfield, founder and CEO of Bloom Renewables, said the repeat commission was the strongest endorsement the Totnes company could ask for.

“There’s probably no better endorsement of a solar project than a customer coming back and asking you to do it again. Brixham Fish Market is a fantastic example because this is renewable energy doing a very practical job – helping power the refrigeration and ice production that a major working fishing port relies on every day.

“It’s brilliant being involved in one of Devon’s oldest industries with technology that can help secure its future – and we’re delighted to be expanding the system with them.”

Adam added that the benefits extend beyond the market’s own electricity bill. Keeping the cost of essential facilities under control helps Brixham continue providing affordable services to fishermen, buyers and other local businesses, while reducing the market’s environmental impact.

Adam said he would like to see more businesses across Devon explore whether renewable energy could help reduce their costs and environmental impact. ☺

<https://bloomrenewables.co.uk/>

AC off doesn't mean DC dead

Tara Fisher, Marketing Director at Gewiss, discusses why safe solar PV isolation starts with understanding the risks you can't simply switch off.

Solar photovoltaic (PV) installations are now a familiar sight across the UK, from domestic rooftops to large commercial projects. That momentum is only set to grow: the UK Government's Solar Roadmap sets out plans to radically increase solar deployment by 2030, while the proposed Future Homes Standard is expected to make rooftop solar the default for most new-build homes. As solar becomes more common, it becomes even more important to understand one of the key safety considerations in PV work: DC isolation.

Solar PV systems bring some challenges that are different from more familiar AC installations. The direct current generated by PV modules behaves in its own way, especially when it comes to isolation, fault conditions and switching.

The hidden risk: Solar doesn't switch off

A key point to remember is that a PV array can remain energised whenever it is exposed to light.

Even if the AC supply has been disconnected and the inverter has been isolated from the grid, the PV modules can continue to generate DC voltage. In other words, switching off the AC side does not automatically make the whole system safe.

For installers, maintenance teams and call-out responders, this is an important safety consideration.

DC conductors may remain live during commissioning, testing, maintenance and repair activities unless correctly isolated and verified as dead.

The key message is simple, AC off does not mean DC dead

Accessible, correctly designed isolation points are essential throughout the life of a PV installation. So why does DC need such careful attention?

To answer that, it helps to look at how alternating current and direct current behave when they are switched.

In an AC circuit, the current naturally passes through zero many times per second. These "zero crossings" help extinguish electrical arcs when contacts separate inside a switch or isolator.



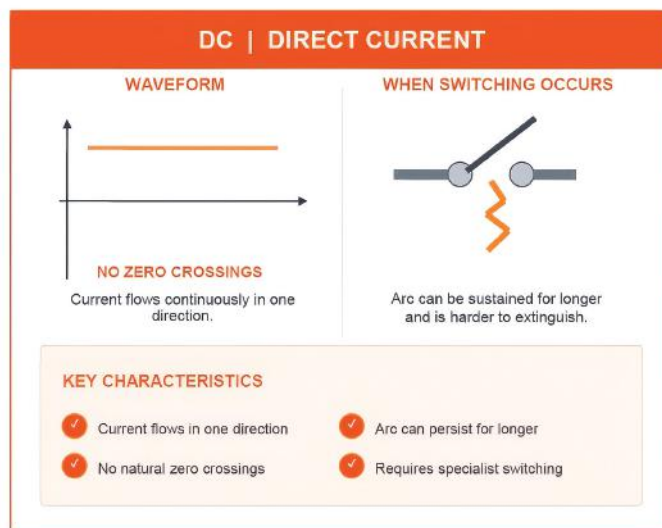
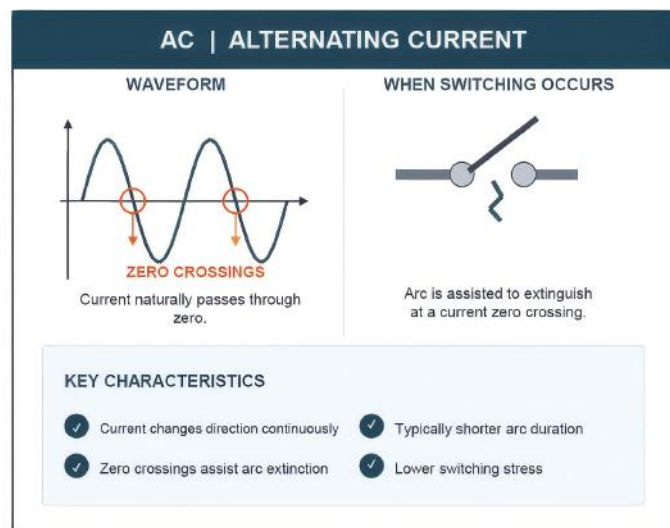
Tara Fisher, Marketing Director at GEWISS UK

DC behaves very differently

Because DC flows continuously in one direction, there are no natural zero crossings to help break the arc. This means an electrical arc can last longer when a DC circuit is interrupted. If the switching device is not designed for that duty, the arc can generate significant heat and increase the risk of equipment damage or fire.

This is why PV isolators must be specifically designed, tested and rated for DC operation.

Put simply, an isolator suitable for AC duties may not provide safe performance when applied to a DC circuit.



Managing arc risks

Electrical arcs can arise from a variety of installation and maintenance issues, including:

- Loose or under-torqued terminals
- Damaged insulation
- Poor cable management
- Incompatible connector combinations
- Moisture ingress
- Equipment operated outside its published ratings

Quality components matter, but good design and installation workmanship are just as important. In many cases, problems are linked not to the equipment itself, but to poor installation practice or insufficient maintenance, putting reputations on the line.

Standards, compliance and safe isolation

In the UK, the regulatory framework gives clear guidance on how PV systems should be designed, installed and maintained safely.

Useful references include the Electricity at Work Regulations 1989, BS 7671 Section 712 for photovoltaic power systems, and the manufacturer's own installation instructions, among others.

These documents alongside others establish the framework for selecting suitable equipment, providing effective means of isolation and implementing safe working procedures.

Safe isolation: More than just installing an isolator

Installing a DC isolator is only one part of a comprehensive safe isolation procedure.

Before any work is carried out on a solar PV installation, all potential sources of energy must be identified.

Modern installations may include PV arrays, grid connections, auxiliary power supplies and other sources that all need to be considered. Taking the time to identify and isolate each

source helps prevent inadvertent energisation and allows people to work safely on the system.

The importance of lock-off procedures

Lock-off procedures play a critical role in maintaining safe working conditions.

Isolation devices should be secured using approved lock-off systems, with personal control maintained by the individual carrying out the work.

Where multiple personnel are involved, multi-hasp arrangements ensure each worker retains protection until the task is complete.

Clear communication and effective warning signage are essential components of the process.



Selecting the right DC isolator

Choosing a DC isolator should never be based solely on a headline current or voltage rating.

The complete application must be considered, including several variables not limited to; maximum DC voltage, operating current, environmental conditions and lock-off capability.

The isolator must be suitable for the actual switching duty it will encounter in service, not simply the nominal system rating.

A thorough design review during the planning stage can help ensure the installation

remains safe, compliant and maintainable throughout its operational life.

Recap

As solar installations continue to expand across the UK, understanding DC isolation has become an essential competence for electrical professionals.

The fundamental differences between AC and DC switching mean that PV systems require dedicated equipment, thoughtful design and disciplined safe-working procedures. Effective DC isolation is not simply a compliance exercise; it is a critical element of protecting people, property and long-term system performance.

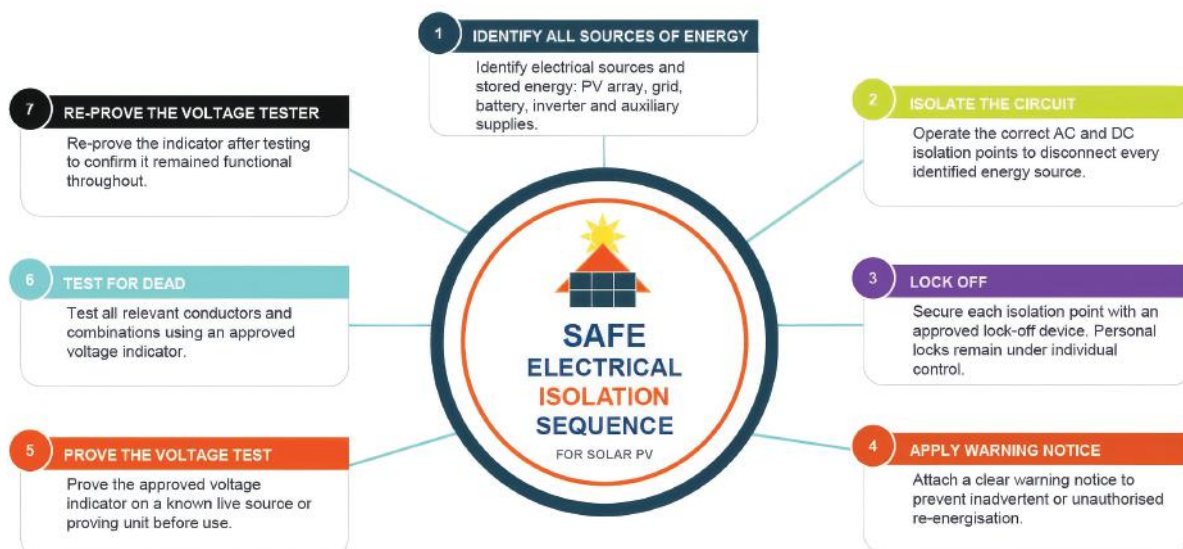
For installers, designers and specifiers, the message remains clear: treat DC with the respect it demands, select equipment that is specifically designed for the application, and ensure isolation procedures remain at the centre of every PV project.

By combining compliant design, quality workmanship and appropriately rated DC isolation equipment, the industry can continue to support the safe growth of solar energy across the UK.

Partnering for safer solar PV isolation

For electrical professionals working on solar PV installations, choosing a partner with the right application knowledge and purpose-designed products can make the difference. GEWISS supports this growing sector with DC isolator solutions developed for photovoltaic applications, helping installers, designers and specifiers select equipment that is suitable for the demands of DC switching, safe isolation and long-term system performance. ☺

<https://www.gewiss.com/uk/en/>



Feeling the heat: Why the Future Homes Standard is becoming a burning issue

Ramin Hakimov is Head of Commercial & Policy Engagement at Allume Energy UK. As the industry prepares for implementation of the Future Homes Standard, he explores what the new solar requirements mean and why apartment buildings must not be left behind.

The summer's record-breaking temperatures have highlighted just how ill-prepared many of our homes are for a changing climate.

As extreme weather events become more frequent and severe, ensuring our housing stock is resilient has become an increasingly pressing challenge, and one the Future Homes Standard (FHS) seeks to address.

The Future Homes Standard comes into force on 24 March 2027, but its influence is already being felt across the industry. With the Approved Documents published in March 2026, developers, planners and design teams are already working on schemes that will need to comply with the new requirements.

For the industry, the changes will fundamentally influence how future developments are designed and assessed. Schemes entering the design stage today are likely to be delivered under the Standard, making early design decisions more important than ever.

Much has been written about what the Future Homes Standard means for building fabric, heating systems and operational carbon. Far less attention has been given to the new solar requirements, and almost none to the challenge of delivering meaningful rooftop solar for flats, despite apartments accounting for a significant proportion of the new homes the Government intends to build.

A changing regulatory landscape

The updated Building Regulations introduce significantly higher performance standards for new homes, requiring substantial reductions in operational carbon emissions compared with previous standards. Alongside these changes, a new functional requirement for on-site renewable electricity generation means rooftop solar will become the default solution for most new homes in England, subject to recognised technical exceptions.

In practice, this represents one of the most significant changes to residential design in decades.

The benchmark assumes solar panel coverage equivalent to approximately 40% of the dwelling's ground floor area, using panels rated at around 0.22 kWp per square metre, whilst also taking account of orientation, roof pitch and shading.

Two points are particularly important:

- Firstly, compliance continues to be demonstrated using SAP 10.3 during the transition period, before the Home Energy Model (HEM) is introduced.
- Secondly, and perhaps more significantly, solar has become a functional requirement in its own right rather than simply another tradeable design element. In practical terms, this means it cannot simply be designed out by improving performance elsewhere. The fabric-first approach remains absolutely the right starting point, and improvements to insulation and airtightness are welcome. However, planners and design teams who assume the required carbon reductions can be achieved through fabric improvements and heat pumps alone, before considering solar as an afterthought, are likely to find themselves revisiting schemes later in the design process.

Four key FHS considerations

1. Solar shouldn't be an afterthought

Roof design, orientation and massing should be considered alongside solar generation from the earliest design stages.

On terraced developments and courtyard schemes, for example, the street layout that creates the strongest urban design outcome may not necessarily maximise solar generation. These trade-offs are best resolved during masterplanning rather than after planning applications have progressed.

Bringing photovoltaic design into the process early allows the available roof area



Ramin Hakimov, Head of Commercial & Policy Engagement at Allume Energy UK

and generation potential to inform the overall scheme before layouts become fixed.

2. Understanding what happens when the benchmark cannot be achieved

The regulations recognise that the benchmark will not always be achievable.

Where roof configuration, orientation or shading genuinely prevents full compliance, a reduced array may be accepted, provided the constraints are clearly evidenced through robust technical assessment and roof design.

This introduces an additional layer of technical justification, particularly on higher-density urban development's where roof space is constrained by plant equipment, access requirements and building form.

As the industry gains experience of implementing the Future Homes Standard, the practical application of these exceptions will become increasingly important.

3. Solving the apartment challenge

Apartment buildings represent one of the biggest challenges and opportunities within the Future Homes Standard.

Historically, the UK's traditional "one roof, one meter" approach has made rooftop solar on multi-residential buildings commercially and technically difficult. Developers have typically been left with two choices: divide limited roof space into multiple small arrays serving individual dwellings, or connect the system solely to landlord supplies.

The latter remains common, meaning rooftop solar often offsets communal electricity consumption whilst residents continue paying full retail electricity prices for their own homes.

As a result, whilst around 7% of UK houses benefit from rooftop solar, only around 3% of flats do, with adoption considerably lower in many dense urban locations. Given that millions of people across England and Wales live in flats, many of whom are social housing residents or households facing higher energy costs, this disparity has significant social as well as environmental implications.

The challenge becomes even greater as buildings increase in height. Roof area available per dwelling reduces significantly with every additional storey, before allowing for plant, maintenance access and fire safety requirements.

The regulations acknowledge some of these practical constraints, including separate implementation arrangements for higher-risk residential buildings.

However, if the Future Homes Standard succeeds in driving rooftop solar on houses whilst apartment residents continue to receive little direct benefit, we risk widening an existing inequality in access to clean, affordable energy.

4. Viability and cost

The Government's impact assessment estimates an average construction cost increase of approximately £4,350 per dwelling across heating, solar, ventilation and fabric improvements.

For developers, local authorities and housing associations, these additional costs will inevitably influence viability assessments, procurement strategies and delivery programmes.

Rather than waiting until 2027, those conversations should already be taking place.

Technology is now catching up with regulation and is starting to address many of the challenges that have historically prevented rooftop solar from benefiting apartment residents.

Allume's SolShare technology enables electricity generated by a single rooftop solar array to be dynamically shared between individual apartments while allowing each resident to retain their own electricity supplier.

The system requires one rooftop array and one grid connection, with no additional equipment installed inside individual flats.

SolShare has been installed across more than 4,000 homes throughout the UK. At Odet Court in Cardiff, for example, residents

are saving up to £690 per year through a shared solar and battery system.

Shared rooftop solar is not the answer for every building. Where roof space is extremely limited or heavily shaded, the benefits may understandably be constrained.

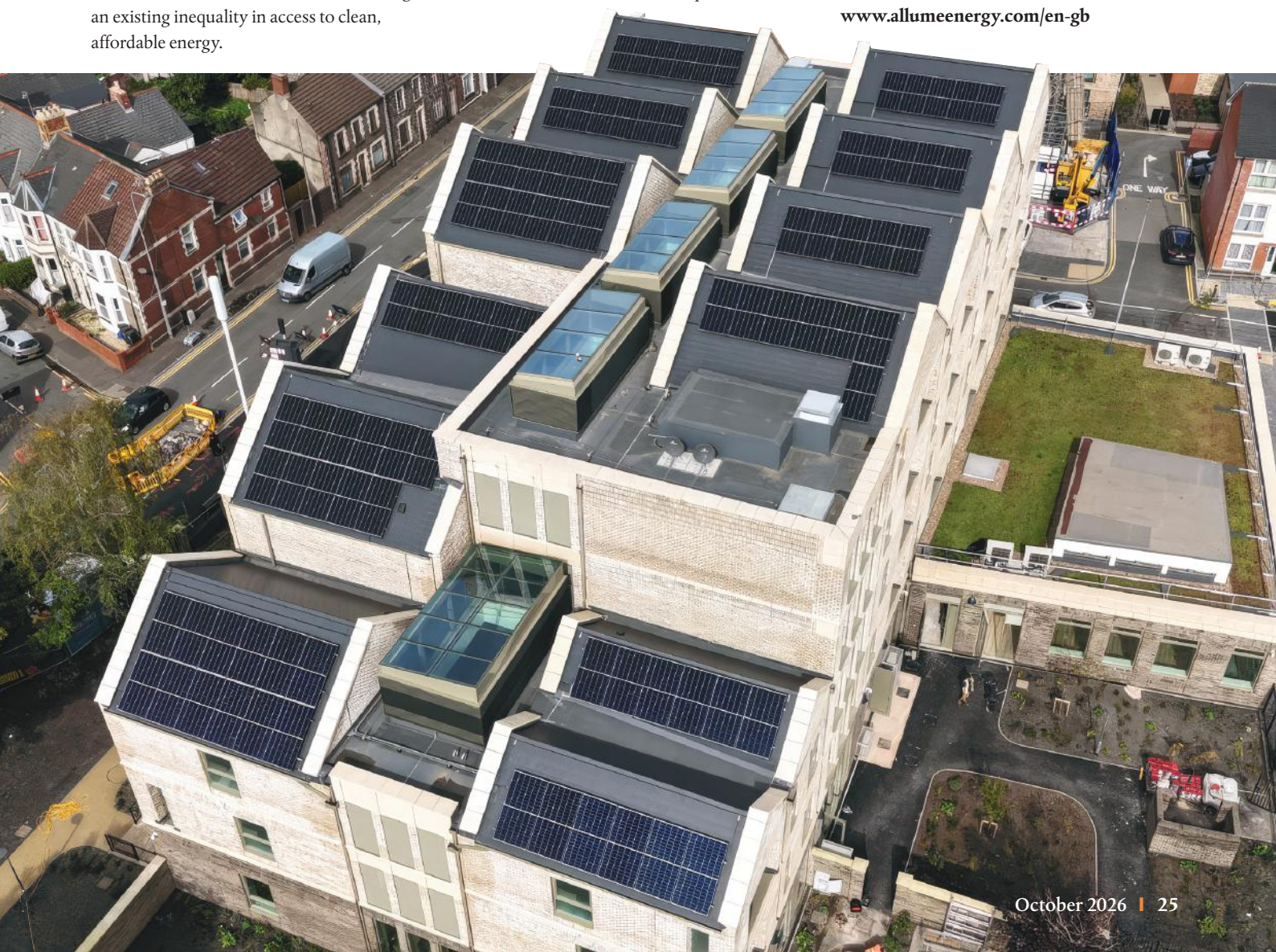
However, for many apartment developments, technologies that enable shared access to rooftop solar provide a practical way of ensuring residents living in flats can benefit from the same clean energy opportunities as those living in houses.

The Future Homes Standard should not simply be viewed as another compliance exercise.

It represents an opportunity to rethink how we design homes that are not only lower carbon, but also cheaper to run and more resilient for the people who live in them.

The decisions being made by planners, developers and design teams today will shape the performance of our homes for decades to come. If we can ensure apartment residents benefit from rooftop solar alongside those living in houses, the Future Homes Standard has the potential to deliver not only better buildings, but fairer energy outcomes too. 🌞

www.allumeenergy.com/en-gb





Why the Cinderella of solar is finally having its moment

Solar thermal is gaining recognition as a valuable solution for decarbonising industrial heat, reducing grid demand and improving energy resilience. **Christophe Williams**, Founder and CEO of Naked Energy, discusses the recent investment in the sector which highlights its growing role alongside heat pumps and other renewable technologies.

For years, solar thermal has been the Cinderella of the solar industry.

The energy transition ball has, almost exclusively, been dominated by electrification. Solar PV has become one of the defining technologies of the energy transition. Wind turbines are familiar features of our landscape and heat pumps have moved from a specialist technology to the centre of the national conversation about how we heat our buildings.

Solar thermal collectors for industrial use meanwhile, have been left outside the ballroom.

However, as much as we would like to think so, the UK cannot decarbonise its energy system by focusing solely on electrification. For a long time, the assumption has been that to decarbonise heat you have to electrify it. Electrification is

essential, (and heat pumps will play a major role) but treating it as the only dancer at the net zero ball asks the grid to shoulder almost every part of the transition at once.

The Government is pushing for millions more electric vehicles, a more electrified industry, a growing number of AI data centres, new housing and heat pumps, which equals a significantly greater demand for power and grid capacity.

Businesses are also facing long waits of one or two years¹ for new grid connections, while recent political discussions about potential risks of a blackout in the recent heatwave have² pushed grid capacity further up the agenda.

These developments highlight that we need to think more carefully and selectively about where electricity is essential, where we can meet energy demand in other ways and how



Christophe Williams, Founder and CEO of Naked Energy

we can use a combination of electrified and off-grid solutions to create more efficient systems.

This is where heat comes in as a serious consideration in its own right. Heat accounts for 70% of UK industrial energy demand³, and much of it is still produced by burning gas and it accounts for 37% of the UK's total carbon emissions per year⁴. If we are serious about cutting carbon, reducing exposure to volatile gas prices and strengthening energy security, renewable heat has to be a top priority.



The problem is that the decarbonisation of heat has been neglected because it's been labelled as 'too hard', similarly to Cinderella's wishes to get to the ball. Businesses are facing a heating trilemma; they need solutions to be clean, reliable and affordable. Heat pumps, the most common solution, are certainly cleaner.

However they're not necessarily more affordable, given they have high installation and running costs (the UK still has the highest industrial electricity costs in the world⁵).

While heat pumps are highly efficient, their performance is heavily dependent on system design. If a system is too reliant on the grid, it becomes vulnerable and inefficient.

More businesses than ever are waking up to the potential of off-grid, or 'grid-edge', technologies to meet this challenge.

Solar thermal is a simple proposition: where a building needs heat, capture the sun's energy as heat and use it directly at the point of use. Every unit of useful heat produced on a roof is heat that does not need to come from a gas boiler or from the grid.

Solar thermal will not meet every kilowatt-hour of that demand. However, what's increasingly clear is that heat pumps won't either because of grid constraints. No single renewable heating technology can solve the combined challenges of cost, carbon reduction, and energy resilience on its own.

Therefore, decarbonising heat is no longer about choosing a technology; it's about designing the right system for specific heat demands. For example, with solar thermal, you can store the hot water created in a tank to create a base layer of heat. This foundation means that a heat pump doesn't need to use as much electricity to get the water up to the required temperature for an industrial process. This is a win-win, as it reduces costs and lowers demand on the grid.

Alternatively, for businesses that can't simply install a heat pump due to grid constraints or the inability to commit to a full retrofit project, grid-edge technologies can be integrated into boiler systems. This reduces the amount of fuel they're consuming, creating a more efficient system that's cheaper and has lower carbon emissions.

The reality is that no one technology needs to "win". The future of heating is not about choosing between electrification and traditional fuels, it is about integration of already available technologies.

This is why Great British Energy's decision to make its first major solar-thermal investment matters beyond any one company.

Great British Energy alongside Barclays Climate Ventures is investing £8.875 million in Naked Energy. The investment will support

a new UK manufacturing facility for solar-thermal technology and the creation of 140 jobs and new export opportunities.

This investment signals that public investment institutions make choices about where they believe strategic value can be created. Backing 'grid-edge' renewable heat sends a signal that the energy transition is seen in a more holistic way. Heat matters to energy security, industrial competitiveness and grid planning. It also represents a large market in its own right. That recognition has been missing for too long.

The energy transition is also an industrial opportunity

Britain has world-class engineering and advanced manufacturing skills. But inventing technologies here is not enough, we need to manufacture more of them here too.

Scaling British production of renewable heat technologies and encouraging a more sophisticated design of heating systems creates skilled jobs, strengthens domestic supply chains and opens export markets, both for grid-edge hardware and for the system design knowledge that comes with it.

Gas price volatility has reminded us of the value of homegrown energy and the scale of the heat decarbonisation challenge is becoming impossible to ignore.

In that context, producing renewable heat directly where it is needed starts to look less like a niche idea and more like common sense.

We still need far more solar PV. We need heat pumps to scale much faster. We need network upgrades, storage, flexibility and a huge expansion of clean electricity.

But we also need to stop asking the grid to do jobs that other renewable technologies can do alongside it.

For too long, solar thermal has been the Cinderella of solar. However, engineering, policy attention and a growing demand for better system design has slowly been turning towards it. The Great British Energy investment just might be solar thermal's glass slipper moment. ☺

www.nakedenergy.com

Source

1. <https://www.solarpowerportal.co.uk/solar-planning/grid-connection-challenge-will-get-worse-before-it-gets-better-uk-investor-says>
2. <https://www.theguardian.com/business/2026/jul/22/risking-blackouts-great-britain-grid-operator-neso-heatwave>
3. https://ec.europa.eu/commission/presscorner/detail/en/ip_23_6044
4. <https://es.catapult.org.uk/guide/decarbonisation-heat/>
5. <https://fullfact.org/economy/uk-world-electricity-prices/>

The reality is that no one technology needs to "win". The future of heating is not about choosing between electrification and traditional fuels, it is about integration of already available technologies.



Why renewable energy infrastructure needs a new approach to physical security

Solar farms and battery sites face growing risks from organised theft, particularly of valuable copper. This article highlights the need for smarter, proactive security measures to protect assets, minimise downtime and reduce costs.

Solar farms and battery storage sites were never designed with physical security as the priority. Most sit on open, unmanned land, hold thousands of pounds of copper and equipment, and were designed around generation output rather than intrusion risk. Police-recorded theft and criminal damage at UK renewable sites has climbed sharply over the past few years, and the gangs behind it are increasingly organised, not opportunistic.

For installers and site operators, this is no longer a footnote in the risk assessment. It shapes insurance costs and planning conversations, and in the worst cases, it costs months of lost generation. This piece looks at why the old approach to securing these sites is falling behind, and what a more resilient model actually involves.

A remote, high-value target

The reasons renewable sites attract criminal attention are straightforward enough: copper

cabling connecting panels to inverters is valuable, and on a large ground-mounted array there can be kilometres of it laid out with minimal physical protection. A single row of panels alone can contain over a kilometre of string cable. Panels themselves can be unbolted quickly with basic tools, and construction phases are worse still, with equipment arriving daily and cable often sitting exposed on drums before it's even buried.

Add a location with no on-site staff overnight and patchy phone signal, and you have a target that can be worked for hours without interruption. High wildlife activity on rural sites also produces frequent false alarms on basic sensors, which makes it harder for older security setups to tell a genuine intrusion from a passing deer.

The scale of the problem has grown alongside the sector

UK police recorded a 93% rise in solar-related crime reports between 2021 and 2022, and the trend hasn't reversed since. Industry crime

intelligence data shared across all 43 police forces in England and Wales recorded more than 70 theft incidents at UK solar sites between January and August 2024 alone, and in over a fifth of those cases, gangs made off with more than 20 kilometres of cable in a single raid. Across that eight-month window, total cable losses ran past 750 kilometres nationally.

Once a gang knows a site's layout and response time, it tends to come back. One Derbyshire site was hit three times within a single month, losing roughly £90,000 of cable in the process. Another operator reported four separate thefts across six weeks, with combined losses passing £250,000 before the site was properly secured. With UK solar capacity on course to roughly triple by 2030, the number of exposed, high-copper sites is only going to increase.

Why traditional measures aren't built for this

A perimeter fence and a scheduled patrol were designed for a static risk, not for gangs who scout sites with drones and test fence lines before committing to a raid. Standard CCTV that simply records footage for someone to review the next morning offers little protection once the cable has already gone. Some operators have started fitting AI security cameras that flag unusual movement at the perimeter as it happens, giving a site team or monitoring centre the chance to respond while an intrusion is still under way, instead of reviewing it after the fact.

That shift matters because the window between a fence being cut and equipment disappearing can be short, sometimes under an hour for an experienced crew working a familiar site. Detection speed, not just detection itself, is becoming the measure that separates a site that gets hit repeatedly from one that doesn't. A camera that records an intrusion is still useful for insurance and police purposes, but it does nothing to stop the cable leaving the ground in the moment it matters most.





Building a layered plan around the site's actual risk

The most effective setups now pair perimeter detection with a monitoring team that can act on an alert within minutes, well before anyone would get round to reviewing footage the next morning. That might mean triggering an audio warning at the site itself, or alerting a local keyholder who can loop in police directly. The specific method matters less than the underlying principle: a site needs to know something's happening while it's still happening, not after the fact.

Effective protection tends to combine several things; leaning on one measure alone rarely holds up for long. Early perimeter detection and rapid alerting form the core of it, backed by a defined response path so an alert actually leads to someone doing something about it. The right mix depends on the site's size and location, along with how far it sits from a manned response. As covered in our solar section, security is increasingly factored into site design from the earliest planning stages rather than bolted on after a first incident.

The real cost goes beyond the stolen cable itself

The value of the copper itself is often the smallest part of the bill. A typical serious incident can run past £250,000 once engineering repairs and weeks of lost generation are added to the tally, before the administrative cost of managing the fallout is even counted. Insurers have started responding accordingly, with premiums rising and physical security conditions attached to cover that weren't there a few years ago.

Getting this sequencing right also has a knock-on benefit beyond insurance. Local planning authorities are paying closer attention to how new utility-scale sites plan to protect themselves before consent is even granted, which means security is starting to factor into the planning conversation itself, not sit outside it as an afterthought.

Physical security is becoming part of the design process

Policing bodies have started responding at a structural level too. The Secured by Design Solar Farm Guide, published in 2026 by Police Crime Prevention Initiatives with the National Infrastructure Crime Reduction Partnership,

sets out a risk-based framework for developers and planners to follow from the earliest design stage through to day-to-day operation. Guidance like this signals that protecting a site properly now belongs in the same planning conversation as grid connection or land use, not something dealt with only after a site has already been targeted. For installers advising clients on new or existing sites, that framework is worth raising early, before security becomes something to sort out once a project is already live.

Getting ahead of the problem

The renewable sector's growth targets depend on sites staying operational, not sitting offline while stolen cable gets replaced. A site designed with physical security in mind from the outset tends to cost less to protect, and lose far less to crime, than one playing catch-up after its first raid. As more capacity comes online over the next few years, that difference will only become more important for anyone specifying or installing these systems, and for the teams managing them once they're live. ☺

<https://www.avigilon.com/blog/ai-security-cameras>

STIEBEL ELTRON

The future of heat pumps is here

NEW
air source
for 26



hpnext

Monobloc air source, ground source & internal air source with integral MVHR.

Quieter, more efficient, easier to install.

New for 2026: 5 & 13kW 230 V, 17Kw 400 V, white units & more!



Find out more



How installers can unlock new revenue through commercial storage retrofits

With export incentives declining and grid constraints tightening, the real-world business case for commercial storage has never been stronger. Here, **Nick Blampied**, Head of Commercial at SolarEdge UK, outlines how “legacy” solar installers can expand into the space and take advantage of a rapidly growing retrofit market.

In recent years, the European commercial & industrial (C&I) solar market has shifted from a PV-only segment to a solar+ storage market. Policy changes across the continent have accelerated the shift away from net metering and feed-in tariffs towards self-consumption models, making the case for on-site storage stronger than exporting excess PV to the grid. We have also witnessed recent geopolitical

conflicts disrupt the global energy market, casting a greater spotlight on energy independence and security. Ultimately, the need to manage high peak-demand charges and the push for grid independence has strengthened the business case for commercial storage, opening up a more compelling opportunity to retrofit storage to tens of thousands of legacy PV-only C&I systems. At the same time, innovative energy management capabilities and falling battery prices have brought a new wave of advanced, yet more cost-efficient commercial storage solutions to the market – removing many of the barriers that previously slowed adoption.

Upsell to existing customers

For most solar installation businesses, the fastest and most cost-effective path to growth this year is unlikely to come from new stand-alone PV installs, as the C&I battery storage market is growing significantly faster than the stand-alone PV-only market. Instead, growth will come from the customers they already have. Adding storage to an installed PV system requires no new customer acquisition – it relies on established connections and the trust already built with clients, clients whom already understand and see the value of reducing grid reliance.

What makes the opportunity even more compelling is how much more straightforward the sales process has become. Advanced design and simulation tools now allow the integration of storage into existing system designs in minutes, streamlining the planning process before installation begins. These tools provide accurate projections for self-consumption, energy usage, and cost savings – enabling installers to clearly demonstrate the financial impact to customers. Faster design, clearer ROI



Nick Blampied, Head of Commercial at SolarEdge UK

projection, and simplified quoting mean that storage retrofits can be positioned as a natural extension of existing solar systems.

Match storage solutions to real-world needs

Before approaching a customer about storage, it's essential to understand which use case their site fits. While commercial batteries can serve many scenarios, four key use cases dominate the market, and not every system is built to handle all of them. It is a good idea for installers to always confirm that any proposed storage solution they recommend meets the customer's real-world operational needs and broader building requirements.

The most common driver is maximizing self-consumption – capturing excess PV that would otherwise be potentially curtailed or exported at lower value. By increasing onsite usage, businesses can significantly reduce reliance on grid electricity and accelerate the return on existing PV assets.

Closely linked to this is managing grid export limitations, a major driver of commercial storage projects today. Many C&I sites face strict export caps, or even zero-export conditions. By absorbing surplus production and releasing it later, storage helps avoid these fines and improve ROI. Achieving this effectively requires an advanced system with accurate consumption forecasting and real-time PV monitoring.



Another key use case is peak shaving. By using battery storage to smooth out energy demand peaks, businesses can reduce demand charges – one of the largest components of commercial electricity bills. However, achieving meaningful savings requires intelligent energy management systems capable of optimizing charge and discharge cycles based on load patterns, weather and increasingly, dynamic tariffs.

Dynamic tariff optimisation is also gaining traction, particularly in markets such as Germany, the Netherlands, and Sweden, with wider rollout expected across Europe. These tariffs allow businesses to charge batteries when electricity prices are low and discharge when prices peak – unlocking additional value through energy arbitrage. To capitalise on this, systems must be able to respond automatically and in real time to changing market conditions.

Understanding which of these use cases apply to a given customer enables installers to craft much sharper proposals.

Key considerations when selecting a storage solution

Once you've confirmed that a system supports the customer's specific use case, reliability is always the priority. Systems that are designed to minimise maintenance and maximise uptime allow installers to focus on scaling their business rather than resolving issues on-site. Considerations often include the manufacturer's track record, durability of the hardware, and robust warranty length. Installers should also look closely at warranty terms, as low cycle limits can significantly shorten real-world warranty coverage and undermine customer value.

Installation support is another key differentiator. Some manufacturers provide on-site commissioning assistance, helping mitigate installation-related risks and accidental damage, and supporting optimal operation from day one. That extra mile support during installation and commissioning has been invaluable for many of our installers.

Regulatory compliance is becoming equally critical. In the UK, the Network and Information Systems Regulations 2018 already impose cybersecurity and resilience requirements on operators of essential services and certain digital service providers, including obligations around secure system operation, incident reporting and supply chain assurance. The Cyber Security and Resilience Bill progressing through Parliament is expected to strengthen and expand the UK's cybersecurity framework further. Meanwhile, the EU's NIS2 Directive is raising cyber resilience



standards across Europe. Although it does not apply directly in the UK, it is influencing expectations, particularly for organisations operating internationally.

Proposed reforms will expand scope, strengthen reporting and enforcement, and allow regulators to designate critical suppliers. Even where installation companies are not directly regulated, they will face stricter cyber-security and supply chain requirements from project owners. Falling short can mean lost contracts, remediation costs, disruption and potential penalties. Working with manufacturers who have a strong cybersecurity track record and corresponding compliance for project implementation makes it easy to meet those expectations from day one. Choose partners who make compliance simple, not an afterthought.

While long-term value such as advanced safety, security and compliance should take precedence, cost remains important.

Measuring CAPEX vs ROI over the lifetime of the system should be taken into account in equal measure.

Finally, future scalability should not be overlooked. Commercial customers often expand their facilities or PV capacity, so selecting a system that can scale easily with additional batteries or modular growth ensures far greater long-term value.

Seizing the storage stage

Commercial storage is set to redefine the role of the solar installer. As energy systems become more dynamic and policy continues to favour flexibility over export, the real value will lie in how intelligently energy is managed on-site. Installers who build capabilities around storage integration, optimisation, and compliance will be better positioned to lead customer conversations. 

www.solaredge.com



Greenvolt Power starts construction of Europe's largest battery energy storage facility

Weronika Nowak, CEO of Greenvolt Power, shares a case study with us on one of Europe's largest battery energy storage facilities, which is scheduled to begin commercial operations by the end of 2027, supporting grid stability and the integration of renewable energy.

Greenvolt Power, part of Greenvolt Group and a developer of utility-scale renewable energy projects, has started construction of the 600 MW / 2.4 GWh Siedlce battery energy storage facility. The project which is located in the Zbuczyn municipality in Poland's Mazovia region, will be the largest battery energy storage system (BESS) in Poland and one of the largest in Europe. Greenvolt Power is working with engineering and construction company P&Q and renewable energy contractor and developer ONDE on the project. The facility will help make better use of renewable energy and deliver it to the national grid when demand is higher.

The agreement with P&Q to connect the facility to the transmission grid was announced on 1 July 2026. Less than three months later, construction is officially getting underway. According to schedule, the facility is expected to begin commercial operations by the end of 2027.

A partnership delivering successive projects

Greenvolt Power and P&Q have already worked together on wind energy projects, including the Pelplin wind farm. The companies subsequently joined forces on the Turośń Kościelna and Elk battery storage projects, each with a power output of 200 MW and storage capacity of 800 MWh. The first of these facilities was inaugurated on 30

July 2026. Elk received its occupancy permit in July, with commercial operations scheduled to begin in the fourth quarter of this year.

"Every joint project teaches us something that we can apply to the next one. We know each other's teams, can identify challenges earlier and agree solutions more efficiently. That is how our partnership with P&Q continues to develop. We are now working together with P&Q and ONDE on a facility of a significantly larger scale," said Weronika.

P&Q will be responsible for connecting the facility to Polskie Sieci Elektroenergetyczne (PSE), Poland's transmission system operator, at 400 kV. The company will build a 400/110 kV substation as well as 400 kV and 110 kV cable connections. This infrastructure will enable the facility to draw electricity from the grid and feed it back when it is needed by consumers.

"The Siedlce battery storage facility is another BESS project that we are delivering together. The experience gained from previous projects allows us to move efficiently into the delivery of the largest battery storage facility in Europe. P&Q is responsible for key elements of the project, including connecting the facility to the PSE grid at 400 kV, constructing the 400/110 kV substation and installing the 400 kV and 110 kV cable connections. This is a strategic part of the overall project, providing the infrastructure required to integrate the facility into the national power system and enable its future interaction with the grid," said **Piotr Sokołowski**, Member of the Management Board and Head of Sales at P&Q.



Weronika Nowak, CEO of Greenvolt Power

"ONDE will build the electrical substation and carry out the associated civil and electrical works for the storage facility. This is not the company's first project with Greenvolt Power. In 2021, ONDE delivered the Podlasek and Wólka Dobryńska wind farms for Greenvolt Power, then GEO Renewables, with a combined capacity of nearly 50 MW.

"Battery storage is becoming another area where we can apply the experience gained from building wind and solar projects. The scale of the Siedlce project requires close coordination of civil works, electrical works and equipment installation. That is why close day-to-day cooperation between our teams, the investor and the other contractors will be so important," said **Bartosz Sobolewski**, Vice President of ONDE.

Four hours of full-power output

When fully charged, the facility will be able to deliver electricity at 600 MW for around four hours. Energy stored during periods of high solar generation can be supplied in the evening, when photovoltaic output falls while demand remains high. This will help better align electricity supply with the needs of households and businesses.

"Every joint project teaches us something that we can apply to the next one. We know each other's teams, can identify challenges earlier and agree solutions more efficiently."

It is estimated, the amount of energy stored in a fully charged facility would correspond to the average electricity consumption of all households in Siedlce for around 16 days. The facility will serve the national power system, with its impact extending beyond the region.

BYD Energy Storage will supply the battery technology. The project will comprise 210 battery containers and 105 transformer containers equipped with power conversion systems, enabling the batteries to interact with the grid. The project area covers 5.23 hectares, around 30% of which will remain biologically active, allowing vegetation to develop.

Making more renewable energy available

The development of wind farms and solar plants is increasing Poland's renewable electricity generation potential. However, output depends on weather conditions, and periods of peak generation do not always coincide with periods of highest demand.

When the system cannot absorb all available electricity, some renewable generation may have to be curtailed. In August 2026, PSE repeatedly issued such instructions to photovoltaic plants.

The Siedlce facility will help absorb part of this surplus, reducing the need to curtail renewable generation. The project is also expected to contribute to wider system flexibility by providing additional capacity that can respond to fluctuations in supply and demand. As renewable generation continues to grow across Poland, battery storage facilities are increasingly being viewed as an important complement to wind and solar assets, helping to manage variability and support the reliable operation of the electricity network. By storing power when generation is abundant and making it available when required, large-scale storage projects can help maximise the value of renewable electricity while strengthening the resilience of the energy system.

This will allow Poland to make greater use of the potential of existing solar and wind assets.

Three projects, eventually 1 GW of power and 4 GWh of storage capacity

Once all three projects are operational, the Siedlce, Turośń Kościelna and Elk facilities will have a combined power output of 1 GW and total storage capacity of 4 GWh

At the end of June 2026, Greenvolt Power's Polish battery storage project portfolio included projects with a combined power capacity of 2.4 GW. 

<https://power.greenvolt.com/>

Ceremony marking the start of construction of MEE Siedlce PŁ Natalia Radtke



Why wiring centres are becoming the brain of modern heat pump systems

Greg Banham, Commercial Director for Navien UK, explains how the growing demand for efficiency has shifted heat pumps from simple 'plug and play' appliances into sophisticated systems that require an organised control hub to manage the entire system.

Before the advent of modern technology, strict regulations and smart controls, traditional heating systems were relatively straightforward to install. Fast forward to today, and growing demand for home heating efficiency, and future-ready solutions such as underfloor heating, as well as an increase in properties with multiple bathrooms, have all brought renewable technologies to the forefront of the industry.

This has created an influx of new homes being equipped with low-carbon, low-temperature sources such as heat pumps. And to achieve the best possible efficiency, these installations often involve multiple bathrooms and heating zones, smart controls,

domestic water integration, underfloor heating and a mix of different heat emitters; all of which need to work together seamlessly.

By changing the way systems are designed, wired and commissioned, this shift creates a more demanding and complex installation environment, leading installers to require solutions that simplify system integration while improving reliability, efficiency and ease of maintenance.

This is where wiring centres come in. Traditionally viewed as a convenient place to terminate wiring connections, today's wiring centres are evolving into central control hubs, providing a link between thermostats, pumps, valves and the heat pump itself, helping to coordinate how the system responds to heating demands throughout the property.



Greg Banham, Commercial Director for Navien UK

The evolution of wiring centres

In their simplest form, wiring centres act as the central connection point for the heating system, organising wiring components into one location, rather than back to the heat pump or controller. However, modern wiring centres do much more than keep wires tidy.

They allow the heating system to operate as an integrated solution by coordinating communication between each part. The wiring centre will manage signals from room thermostats, activate underfloor heating or solar panels, control pumps and motorise valves, as well as communicate heating demand back to the heat pump from different zones and subsequently manage a structured system shutdown.

As heating systems continue to advance, this centralised approach offers installers many practical benefits. From clear wiring layouts to faster commissioning and future troubleshooting, installers and engineers can now access a central point rather than tracing wiring routes around a property. This translates into faster installations, cleaner system layouts, easier cable management and simpler maintenance.

Scalability is another major advantage. Should a customer add an extension, additional zones or smart controls in future, as long as the original heat pump system can work with the extra load, then the systems built around the wiring centre could easily be expanded and adapted without requiring extensive and expensive rewiring. Should the extra load require reinforcements, then a cascading heat pump or a heat pump with a higher kW may be required.

Lastly, but most importantly, commissioning remains one of the most critical stages of any heating installation. A well-designed wiring centre will make this significantly easier as well as reduce the likelihood of errors occurring in the first place. Such a clear and organised process will make future servicing easier, and homeowners will benefit from a system that works reliably from day one.

A controlled infrastructure

One of the biggest selling points of modern heating controls is the ability to create multi-zone heating. Rather than heating a whole property, and wasting energy and bills on unused rooms, zoning allows different areas of a property to operate independently, according to the homeowner's routine and preferences.

Zoning is particularly important in heat pump systems because the heat pump can operate best when delivering stable, low-temperature heating. By managing when and where heat is required, zoning can help avoid overheating spaces and support consistent system operation.

Additionally, many new builds or refurbished properties will have different heat emitters for different parts of the



A clear and organised process will make future servicing easier, and homeowners will benefit from a system that works reliably from day one.

home. Underfloor heating that is installed downstairs, for example, will operate at lower temperatures than traditional radiators that are installed upstairs. A well-controlled zoning system will enable these different systems to operate effectively within the same installation.

As homeowners continue to expect smart controls and room-by-room scheduling, installers will find themselves under pressure to provide systems that can deliver the desired flexibility and smarter functionality. Here, the wiring centre provides the infrastructure to make this level of control feel seamless to customers.

Future-ready integration

As these technologies continue to develop, for installers, wiring centres shouldn't be seen as simply an accessory to hide wires. Rather, they should ensure that they are central to delivering efficient, scalable and future-ready heat pump systems. As demand for smarter, more integrated heating control grows, future-ready manufacturers are at the forefront of developing solutions designed to simplify heat pump installations.

Navien's new NAW300-SI wiring centre reflects this wider shift towards installer-

focused system integration. Designed to simplify wiring between Navien's PEM750 heat pump and its components, the professional hub centralises all connections into one sleek enclosure to eliminate external wiring clutter. Complementing the heat pumps inherent dual-zone logic, radiators and underfloor heating can be managed simultaneously, while its built-in Smart Grid Ready features are easily accessible to the wiring centre, allowing for a tidy connection to Solar PV systems.

The NAW300-SI offers full hardware versatility, supporting all standard third-party passive switch thermostats and includes an integrated over-heat protection for immersion heaters. By facilitating the PEM750's intelligent AT-WT curves across multiple zones, this innovative wiring centre ensures that indoor comfort is automatically optimised based on outdoor conditions via a single control point.

As multi-zone heating and intelligent controls continue to move into the mainstream, wiring centres are fast establishing themselves as the control hub for modern heating systems. 🌟

<https://navien.co.uk/professional/>



What contractors, specifiers and installers should consider when evaluating R290 heat pumps?

R290 heat pumps can offer an efficient, lower-carbon solution for commercial buildings, particularly when heating and cooling are managed together. In this article **Craig Moreton**, Controls and Heat Pumps Systems Lead at Trane UK, highlights safety, smart controls, heat recovery and whole-life efficiency as key considerations.

The transition of the UK's commercial and public building stock away from fossil fuel heating is no longer a distant regulatory target; it is an active operational challenge. When evaluating technologies to meet this challenge, stakeholders need practical guidance rather than a debate framed around a single technology. The key question is not which refrigerant wins in theory, but which solution is best suited to the application, the building constraints, the operating profile, and the long-term strategy for the asset.

We encourage contractors and specifiers to remain refrigerant-agnostic, evaluating options by thermal performance, regulatory trajectory, installation implications, and lifecycle value. However, for commercial applications below 350 kW, R290, a natural refrigerant with practically zero GWP, is a highly compelling option. Its excellent thermodynamic properties enable heat pumps to deliver outlet temperatures of 70°C or more. Furthermore, its high-efficiency performance in cooling mode significantly strengthens the year-round business case.

How safety concerns around R290 can be addressed with facts, standards, testing, safeguards and implementation guidance?

For contractors, consultants, building owners, and end users alike, safety is not a secondary

issue. It is fundamental to specification, installation, and operation. R290 is classified as an A3 highly flammable refrigerant, but this conversation must move beyond assumptions and focus on facts, rigorous testing, and implementation guidance.

For all its thermodynamic and environmental benefits, the safety of R290 is addressed through smart monobloc design. The system is developed to reduce risk from the beginning, and that rests on three main safeguards:

First, the refrigerant circuit is designed and built to minimise any potential leak paths, supported by rigorous factory standards and thorough testing.

Second, operational safety is further supported by encapsulated electrical components, with ATEX-rated or intrinsically safe enclosures to eliminate the potential ignition sources near any potential leak points.

Third, if a leak were ever to occur, the system is designed to detect and manage it safely, using leak detection together with ventilation and dilution mechanisms to stop refrigerant from building up, and to keep levels well below the lower flammability limit (LFL).

Additionally, because the systems are sealed, the installer does not handle raw refrigerant on-site, which simplifies implementation and reduces on-site labour risks.

How to separate fact from fiction when discussing flammable refrigerants?



Craig Moreton, Controls and Heat Pumps Systems Lead at Trane UK

It starts with moving the conversation away from theoretical concern and toward practical application. One common misconception is that an A3 refrigerant such as R290 brings unmanageable risks to a commercial site or demands a complete change in how contractors work. In reality, modern monobloc units are designed with safety features built in, but the unit is only part of the wider system. Safe and effective application also depends on good plant design, proper integration, and maintenance carried out with the right skills and procedures.

Another misconception is that the installation process is overwhelmingly complex. In practice, the move to flammable refrigerants does require specific competence, awareness, and some additional considerations, but it does not mean starting from zero. What matters is understanding the application, following the relevant standards, and designing the system correctly from the outset. This is also where integrated options and practical recommendations can make a real difference, helping simplify design decisions and



Why operating profile matters when evaluating annual efficiency and lifecycle value?

Many commercial buildings do not have a simple, single-mode load profile. When we evaluate heat pumps as part of a wider thermal management system, the design conversation shifts to how the building uses energy throughout the year, at part load and peak load, during occupied and unoccupied periods.

Thermal system design must reflect sector-specific realities. In healthcare, estates teams face a continuous, 24/7 demand for space heating, high-temperature domestic hot water, and critical cooling for diagnostics and wards. The ability of an R290 heat pump to deliver consistent, high-temperature water without supplementary heaters is a major operational advantage.

Education campuses have highly seasonal occupancy. They require high heating capacities in winter but have low occupancy in peak summer, yet still need domestic hot water and IT cooling. Understanding this low-load summer profile prevents oversizing equipment, ensuring the heat pump operates within its optimal efficiency band.

Meanwhile, commercial offices and public estates experience dynamic, occupancy-driven load changes. High solar gains mean cooling is often required even during spring and autumn. A heat pump capable of highly efficient cooling can leverage these ambient shoulder months to deliver exceptional seasonal efficiency, directly improving the lifecycle value.

What matters in specification, retrofit, controls, maintenance and operational performance?

What matters most is understanding that the greatest gains come not from viewing technologies in isolation, but from a thermal strategy across the building. Stakeholders must ask not only how a unit performs nominally, but how it will function within the wider building environment over time. Will it integrate effectively with existing plant and controls? Is it genuinely suitable for the realities of a retrofit?

Specification must focus on real operating data. Leveraging intelligent building controls and AI-powered energy optimisation allows these components to function as a single, coordinated asset, rather than disparate machines fighting against one another. Operational reliability and sustainability work hand-in-hand to reduce maintenance burdens and guarantee compliance. By analysing and prioritising practical application and robust control strategies, building owners and estates teams can invest with confidence. 

<https://trane.eu/uk/>

supporting safer implementation. For example, solutions such as gas/water separation can help make the system approach more straightforward for designers.

When those facts are clearly understood, the conversation becomes far more constructive. It gives stakeholders the confidence to move forward with solutions that are compliant, efficient, and designed for safe long-term operation.

Why heat pumps should be assessed as year-round thermal systems, not simply heating replacements?

Reducing the conversation to a like-for-like heating replacement risks missing the bigger picture. The building sector has traditionally treated heating and cooling as two completely separate silos: one system designed to provide cooling, and another dedicated to heating. In this setup, excess heat from cooling processes is routinely vented to the atmosphere. This creates an absurdity that is still common in many buildings today: a chiller rejects heat on one side of a plant room, while a boiler is simultaneously burning fossil fuels to create new heat on the other.

By looking at heating and cooling from the perspective of a unified thermal management system, we can turn this inefficiency around. Managing them together allows buildings to capture thermal energy that would normally be wasted and use it for comfort heating, domestic hot water, or other facility needs. At Trane, we do not just manufacture equipment,

we deliver complete, high-performing solutions. That means providing the full ecosystem, the right mix of technology, connected support, and systems integration, to capture and reuse thermal energy throughout the whole year.

How heating and cooling performance should both be considered in real applications?

Heating and cooling performance must be evaluated together because there is simply no need to pay twice for the same thermal energy. When you integrate heating and cooling, these heat-pump-based systems can operate up to 400% more efficiently than traditional boiler-and-chiller setups. By recovering heat that is already paid for, they deliver substantial reductions in both carbon emissions and operating costs.

In real applications, strong cooling efficiency and operation at high cooling loads can materially improve the long-term value of the equipment. While the core driver for an R290 heat pump may be its strong heating efficiency and future-ready refrigerant choice, the cooling-side value reinforces the overall business case. When long-term maintenance savings, compliance protection, and carbon reduction goals are factored in, treating the heat pump as a dual-performance asset makes the Total Cost of Ownership (TCO) highly compelling. The incremental cost of installing such an integrated system can often be recovered in just a few years.



Partnering for success: Why early engagement with manufacturers pays when retrofitting air source heat pumps

As demand grows for low-carbon heating in existing non-domestic buildings, early collaboration with manufacturers can help turn complex heat pump retrofits into practical, efficient and future-ready projects, says **Shane Suter**, Commercial Business Director at Baxi.

Heat pumps are one of the favoured technologies to accelerate the UK's net zero journey, not only in new commercial buildings but across the existing non-domestic building stock where the greatest retrofit challenge lies. For heating engineers, specifiers and contractors working in commercial, public sector and larger housing development environments, the opportunity is significant. But so too can be the technical complexity. A successful retrofit is rarely achieved by simply replacing a boiler with a heat pump. Understanding the building, the heat demand, the distribution system, the electrical infrastructure and the available space are just some of the factors requiring consideration at the outset.

Early engagement across the project team from the early stages has become increasingly important to help clients plot their route to lower-carbon heating. And that includes dialogue with manufacturers and commercial HVAC solutions providers. Gone are the days when manufacturers simply shipped boxes. From initial feasibility surveys, system selection, and technical design to specialist seasonal commissioning, tailored maintenance programmes and aftercare, they can provide expert support throughout the lifetime of the air source heat pump (ASHP), helping ensure optimal performance at every step. Let's consider the benefits.

Starting by understanding the building

A major advantage of early manufacturer involvement is that it encourages the project team to begin with the building's actual requirements, rather than a preferred piece of equipment.

This is particularly important in retrofit, where no two buildings are exactly alike.

Older buildings may be served by existing heating systems designed around high-temperature boilers, older radiators and legacy pipework that have been refurbished over time. In such buildings, a manufacturer-led feasibility survey can help identify whether a heat pump is viable and the level of upgrade that may be needed. The process typically includes assessing heat losses, emitter sizes, plantroom or external space, access routes, noise considerations, controls strategy and hydraulic integration. This stage is invaluable to ensure that heat pumps, which perform best at lower flow temperatures than traditional boiler systems, achieve their maximum efficiency.

An added benefit of the survey process is that it enables specifiers, heating engineers and contractors to plan the works and make informed decisions early, whether that means applying for planning permission, upgrading emitters, improving controls, phasing works, or retaining boilers for peak load support in a hybrid heat pump system. All of which helps de-risk the process.

Design support

Early engagement with manufacturers also supports better design. Heat pump retrofits often involve a wider set of design questions than a like-for-like boiler replacement. Considerations might include the flow temperatures the building can realistically operate at, whether buffer storage is required and the merits of adopting a hybrid heating system.

Experienced manufacturers will be able to support consultants and specifiers with pre-sales technical design services, engineering a series of tailored design options. They can then test these options, providing technical product data, system knowledge and design simulation tools.



Shane Suter, Commercial Business Director, Baxi

A full electrification strategy may offer the greatest carbon reduction, for example, but may require fabric upgrades or increased electrical capacity. A hybrid system may not achieve full decarbonisation, but can provide a practical stepping stone where budgets, space or operational risk make a full transition harder to achieve immediately.

This 'optioneering' stage enables a more evidence-based conversation with the client to help arrive at the best solution for the project.

Managing electrical and infrastructure constraints

Electrical capacity is another area where early discussions with manufacturers can benefit the smooth running of a project and keep it on track. This involves determining the electrical infrastructure required to support the new ASHPs, identifying if additional supply is necessary – which can impact project timelines and costs –, the power supply type, overcurrent and fault protection requirements, and smart grid/tariff integration to take advantage of cheaper energy tariffs.

Reduced project risk

For contractors, an added value of early manufacturer engagement lies in improved commercial certainty and in training.



Manufacturers can provide the clear input needed at the tender stage, from equipment guidance, technical documentation and schematics to commissioning requirements and training support. This information is also useful for installation quality and the handover process.

Importantly, manufacturers are also a useful resource to provide the necessary product training, continuing professional development and practical technical advice to keep heating professionals updated as heat pump techniques and technologies evolve.

Whole life support

Correct commissioning (and seasonal recommissioning), appropriate control settings and user understanding are essential if the heat pump system is to perform optimally post-installation.

Manufacturer involvement with training the building operator, facilities or estates manager on operating the new system is therefore vital to reduce the risk of poor performance being wrongly attributed to the technology itself.

It's worth noting here that some experienced manufacturers like Baxi will also offer tailored maintenance plans. This is in addition to full aftercare support including service and spares, helping heating engineers access the genuine

parts, expertise and support needed to keep customers' heating systems running reliably throughout their lifetime.

Realistic decarbonisation pathways

Whole life support will undoubtedly benefit the client. But for organisations and businesses wanting to reduce carbon emissions but who may not fully understand what a heat pump retrofit involves, early engagement will also make the decarbonisation journey more transparent. Experienced manufacturers like Baxi can break down the complexities of the project to help businesses and organisations make the right decision to meet the specific needs of their building.

Additionally, it can help them prepare for the work ahead. For example, a heat pump may be technically viable, but the best outcome might depend on complementary measures such as improved insulation, weather compensation, system balancing or phased plant replacement. In some cases, therefore, a staged pathway can be more realistic than a single major intervention. For public sector estates, schools, healthcare premises and commercial buildings with limited shutdown windows, that knowledge and ability to forward plan can be crucial.

A partnership approach to retrofit

Perhaps the strongest argument for early engagement is that heat pump retrofit is fundamentally collaborative. The best solutions are developed when the heating engineer, consultant, contractor, manufacturer and client work together from the outset. Each brings a different perspective: the contractor understands site practicalities, the consultant understands design intent, the client understands operational needs and the manufacturer understands system capability.

When these conversations happen early, the result is a better-informed project. Risks can be avoided, budgets are based on realistic assumptions, system choices are matched to building requirements, and training and commissioning are built into the programme.

Most important of all, this makes it more likely that the client will receive the best solution for their building, one that performs as intended and delivers the expected carbon, comfort and efficiency benefits. 

www.baxi.co.uk/commercial



A new market for high-temperature heat pumps

Phil Cruver Co-founder and CEO of Geo2Watts™, discusses high-temperature heat pumps (HTHPs) which could store electricity as underground heat and later convert it back into power, potentially creating a new form of long-duration energy storage.

Europe has become a center of innovation for high-temperature heat pumps, with manufacturers, research organisations and industrial users increasingly focused on replacing fossil-fuel boilers and decarbonizing process heat. The IEA Heat Pumping Technologies Technology Collaboration Program's Project 68, launched in 2025, reflects the growing maturity of this sector. Its objective is to accelerate the uptake of industrial high-temperature heat pumps (HTHPs), and the program has already mapped more than 55 technology suppliers and over 40 demonstration cases. That work is important. But it may also be preparing the heat-pump industry for a market that extends well beyond industrial heat.

A new application emerging in the United States could use HTHP technology not simply to deliver heat, but to store electricity as thermal energy and later convert that stored energy back into dispatchable electricity. If successful, reversible high-temperature heat pumps (RHTHPs) could become a core component of a new category of long-duration energy storage and provide heat-pump manufacturers around the world with access to the rapidly expanding U.S. electricity market.

America's new electricity problem

For much of the past two decades, electricity demand in the United States was relatively flat. That period is ending. Artificial intelligence, hyperscale data centers, semiconductor facilities, electrification and the on-shoring of manufacturing are combining to create levels of electricity-demand growth that the U.S. power industry has not experienced for decades. The U.S. Department of Energy identifies AI, data-

center expansion, domestic manufacturing and electrification as principal drivers of a return to sustained electricity-demand growth.

Data centers illustrate the scale of the challenge. Lawrence Berkeley National Laboratory estimates that U.S. data centers consumed approximately 176 TWh of electricity in 2023, equivalent to about 4.4% of total U.S. electricity consumption. By 2028, consumption could rise to between 325 and 580 TWh, representing approximately 6.7% to 12% of all U.S. electricity consumption. That corresponds to estimated data-center power demand of roughly 74 to 132 GW.

And data centers are only part of the story. Berkeley Lab specifically identifies on-shoring of manufacturing, industrial electrification, hydrogen production and other forms of electrification as contributors to a much larger long-term increase in U.S. electricity requirements. This creates two challenges simultaneously.

America needs substantially more electricity, but it also needs electricity when customers require it, not merely when renewable generation happens to be available. That difference creates an enormous opportunity for energy storage.

Moving the heat pump from heat production to energy storage

Geo2Watts is developing the Borehole Battery™ Platform (BBP), around a different application for HTHP technology and the concept is straightforward. During charging, electricity powers a HTHP that moves thermal energy from a lower-temperature source into an underground thermal-energy-storage system. The heat is stored inside closed-loop, cased-and-cemented boreholes constructed from repurposed oil and gas wells. When electricity is required, the thermal energy is



Phil Cruver Co-founder and CEO of Geo2Watts™

recovered and used through an expansion and generation system to return AC electricity to a grid or behind-the-meter customer.

Importantly, this is not geothermal energy. The wells do not extract naturally occurring underground heat but are storage vessels for heat deliberately placed underground during the charging cycle. The distinction is important for the heat-pump industry. Most HTHPs being commercialized today have been designed around a relatively familiar objective: supply industrial process heat more efficiently and with lower emissions than boilers.

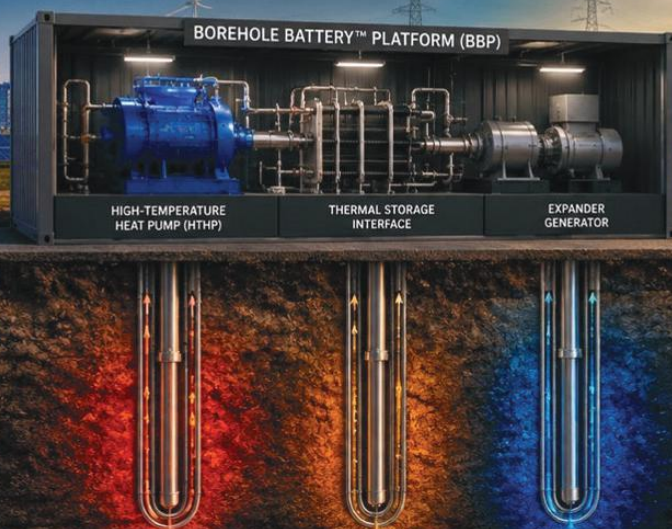
The BBP asks a different question: Can the same fundamental heat-pump technology become part of a reversible machine that charges thermal storage when electricity is abundant and returns electricity when it is scarce and valuable? That turns the HTHP from an industrial heating appliance into part of a power-generation and energy-storage system.

Why the coefficient of performance (COP) matters

The attraction of the heat pump is rooted in one of its defining characteristics: coefficient of performance (COP). A heat pump does not convert one unit of electricity into one unit of heat. It uses electricity to move thermal energy. Consequently, an HTHP operating at a COP above 3 can transfer more than three units of thermal energy into storage for each unit of electrical energy consumed.

From Industrial Heat to Clean Power

Reversible High-Temperature Heat Pumps for Long-Duration Energy Storage



The Borehole Battery™ Platform
Storing Renewable Energy Underground.
Delivering Clean, Dispatchable Power When It's Needed Most.



That does not mean the complete electricity-storage system achieves a COP of three. Electricity must subsequently be recovered from the stored thermal energy, and overall AC-to-AC round-trip efficiency depends on the entire thermodynamic cycle, including compressor performance, heat exchangers, storage losses, pumps, parasitic loads and expansion efficiency.

But the heat pump's ability to move substantially more thermal energy than the electrical energy supplied to its compressor is precisely what makes the architecture interesting. The engineering challenge is therefore no longer simply to build the most efficient heat pump. It is to optimize a reversible thermal-to-power system.

The opportunity for a reversible high temperature heat pump (RHTHP)

The long-term objective is a purpose-built RHTHP optimized for both halves of the storage cycle. In charging mode, the machine operates as a HTHP moving heat into thermal storage. In discharge mode, the architecture uses the stored thermal energy to drive an expander-generator and produce electricity.

Geo2Watts' present system architecture integrates compressors, expanders, generators, recuperative heat exchangers, pumps, valves and controls with the changing thermal behavior of the underground storage system. Unlike an HTHP designed around

one stable industrial process temperature, an energy-storage machine must operate across a changing thermodynamic envelope.

Storage temperature changes during charging and discharge. Electricity prices change and grid requirements change. The machinery must accommodate startup, shutdown, part-load operation, turndown and transitions between charge, standby and generation. That creates an engineering opportunity for manufacturers already developing compressors, expanders, and HTHPs for industrial applications.

European manufacturers have spent years solving many of the difficult problems involved in higher discharge temperatures, refrigerant selection, compression architectures, heat exchangers and large industrial machines. Project 68 is helping establish exactly this kind of technical and commercial ecosystem. Its current work involves manufacturers, end users, universities and research organizations and is intended to move industrial HTHPs from demonstrations toward broader deployment. The next market may be electricity.

America could be the large new market

The scale of U.S. electricity demand makes this particularly significant. A data center does not merely need inexpensive electricity. It requires dependable electricity around the clock. Likewise, advanced manufacturing plants cannot base production schedules

solely on when solar or wind resources are available. That means a rapidly expanding renewable generation fleet increasingly needs to be paired with storage capable of shifting large quantities of energy from periods of abundance into periods of high demand.

The U.S. Department of Energy specifically identifies onsite generation, energy storage and long-duration energy storage among the technologies that can help accommodate rapidly increasing data-center demand. For a future RHTHP manufacturer, that potentially changes the addressable market dramatically. Instead of selling equipment primarily according to the number of factories requiring process heat, manufacturers could ultimately participate in a market measured against hundreds of gigawatts of new generation and storage infrastructure.

And unlike many greenfield energy projects, the BBP is intended to use existing industrial infrastructure wherever possible. America has hundreds of thousands of oil and gas wells approaching or already at the end of productive life. The BBP is designed to repurpose technically suitable wells as thermal storage assets while potentially reusing industrial sites, substations and existing grid connections. That introduces another unusual characteristic: storage can be distributed and dispatchable, located near industrial customers and existing electrical infrastructure rather than necessarily being concentrated in large standalone storage projects. ➡



Can a RHTHP Compete with a Battery Energy Storage System (BESS)?

Lithium-ion battery energy storage systems have become the dominant technology for short-duration grid storage and will remain important. But the competitive environment changed significantly on August 26, 2026, when President Trump declared a national emergency concerning foreign supply of equipment used in the U.S. bulk-power system.

The Executive Order goes beyond the sourcing restrictions created by the One Big Beautiful Bill Act. Prohibited Foreign Entity (PFE) and Foreign Entity of Concern (FEOC) requirements primarily affect eligibility for federal clean-energy incentives. The new order introduces a broader national-security test, allowing the Federal Government to prohibit certain transactions involving foreign-produced bulk-power equipment associated with Covered Foreign Entities when unacceptable cybersecurity, sabotage, remote-access or supply-chain risks are identified. The order specifically encompasses BESS, grid-connected inverters, transformers, generators, turbines, industrial controls and associated software.

For storage developers, equipment sourcing may therefore become more than a tax-credit issue. In some circumstances, it could determine whether equipment can be acquired, installed or remain connected to critical U.S. power infrastructure. That creates an opening for alternative long-duration storage architectures designed to reuse existing wells, industrial sites, substations and electrical infrastructure while returning synchronous AC power through an expander-generator rather than relying on a battery inverter for discharge. A future RHTHP built around secure U.S.-manufactured compressors, expanders, generators, heat exchangers and controls could combine long-duration storage with brownfield infrastructure America has already built and paid for.

For applications requiring ten or more hours of storage, developers may increasingly evaluate more than installed cost and round-trip efficiency. System lifetime, degradation, storage duration, cybersecurity, domestic manufacturing, supply-chain resilience, synchronous generation and reuse of existing infrastructure could all become important measures of value. If RHTHPs achieve the required efficiency, reliability and economics, brownfield RHTHP-based storage

could offer something increasingly valuable: dispatchable and distributed electricity built around secure infrastructure already operating on American soil. 

Phil Cruver is a Co-founder and CEO of Geo2Watts™. Previously, he was the Founder and CEO of Catalina Sea Ranch, the first aquaculture facility in U.S. Federal waters developed six miles offshore California. Phil was also the founder of five additional start-up companies and recently served as Principal Investigator for over \$1.2 millions of Federally funded R&D projects. He is also a wind energy pioneer who founded International Dynergy, a publicly traded company that installed 500 wind turbine generators in Palm Springs, California.

<https://www.geo2watts.com/>



**BESA ANNUAL
CONFERENCE**

HEADLINE
SPONSOR



MITSUBISHI
ELECTRIC

22 October, The Brewery, London

BE CURIOUS AND GO BEYOND COMPLIANCE

**Raising Standards, Proving Competence,
Delivering Better Buildings**

conference.thebesa.com



GET YOUR TICKETS





ARE YOU GETTING 100% OF HEAT?

To do or not to do... that is the mounting question

Placement of your air source heat pump (ASHP) is important, but you cannot always get the ideal location. **Paul Greengrass**, Product Development Director from DiversiTech answers some questions on mounting your ASHP unit.

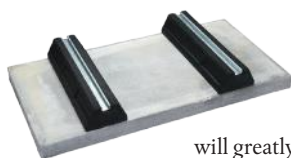
Correct siting and mounting of an ASHP unit is a critical factor influencing system performance, customer satisfaction, and long-term reliability. As installers, we know that a well-installed unit (with the correct maintenance) will run efficiently for 15–20 years — while a poorly positioned one can lead to callbacks, noise complaints, and avoidable performance issues. Getting it right at the install stage saves time, protects performance, and strengthens client confidence.

What are the key considerations when deciding how to place an ASHP unit?

ASHPs must be allowed to breathe to allow the unit to perform efficiently. If the airflow is restricted, this will lead to inefficiency and unnecessary wear on the compressor. Maintain manufacturer's recommended clearance to sides and rear and allow a discharge zone in front of the fan. Planning compliance should be considered during initial survey and not left to paperwork at the end.

What kind of base ensures stability?

Get the base right! The mounting base must support the unit through its operational life. Movement will lead to vibration, refrigerant stress and noise transfer. A concrete slab (minimum 100mm thickness) on compacted hardcore needs to be installed level. It needs to be raised slightly above surrounding



ground to prevent pooling water. Anti-vibration feet will greatly reduce any noise that the unit makes. DiversiTech recommends the FLEXI Lite Slab kit as it is a cost (and time) effective alternative to a concrete base.



Installing using FLEXI Lite Slab Kit

This innovative solution comes complete with rubber mounting anti-vibration feet (2 or 3-foot options) and is available in a range of sizes (175mm thickness inclusive foot). This kit can be delivered to site and constructed easily, and is a fibre reinforced concrete coated slab independently tested to varying weather conditions and exposure to chemicals.

Can ASHPs be mounted on a wall?



Installing using brackets



Wall brackets can work well on sites with limited space - or when you need to raise the unit. The wall must be structurally sound and load bearing. DiversiTech brackets are flat packed and easy to assemble – and provide a professional finish to the installation. The crossbar (complete with spirit level) allows the

uprights to be spaced exactly as required and include wall spacers to help level the unit.

These brackets are powder coated in a scratch resistant textured finish and undergo a complex weather protection process to combat corrosive environments. Condensate trays are available to fit most standard units when considering a drainage strategy. They are available in a range of sizes and colours with 2 or 3-arm versions – with different load capacities.

What can you do if an uneven ground mount surface is the only option?



In some cases, structurally sound wall mounting and a flat level ground mounting surface is not available. The Baby Sumo adjustable rubber support anti-vibration feet are the idea solution when you need to support units on uneven or sloping surfaces. They have an adjustable height between 160-210mm and are made of SBR vulcanised UV-stabilised recycled rubber compound with internal glass fibre-reinforced polypropylene.



Installing using adjustable feet

The support surface features a substantial contact area offering a stable and secure base which prevents water stagnation and seepage. ☞

GET IN CONTACT:
<https://diversitech.global/sales@diversitech.com>



Storage is where the real savings start

Ben Gallizzi, Energy Expert at Uswitch, discusses that batteries are becoming an important addition to solar panels, especially for homes with heat pumps, helping households store excess solar energy and reduce electricity costs.

Solar panels get the headlines, but it's the battery sitting beside them doing the real work on a household's bills. For homes that have also switched to a heat pump, that work matters even more.

For years, the pitch to homeowners was simple: fit solar panels and watch the bills fall. That's still broadly true, but it isn't the whole story any more. Battery costs are coming down, grid prices are staying high, and more households are asking installers for somewhere to put the energy their panels generate.

We see this shift in our own customer quotes and research at Uswitch. Two-fifths of UK energy bill payers (40%) say volatile energy prices have made them more likely to invest in solar, storage or a heat pump, and almost three million households (one in 10) now plan to install solar within five years. Storage is

increasingly part of that conversation from day one, not bolted on as an afterthought.

The self-consumption problem

Solar panels only pay off quickly if the electricity they generate actually gets used. Without a battery, most households self-consume only 30-50% of what their panels produce. The rest gets exported to the grid, usually for a fraction of what it would cost to buy back a few hours later. Add a battery, and that self-consumption rate can climb to 70% or more.

Adding a battery pushes the upfront cost up, but it changes how much of the electricity a household generates that it actually gets to use. Without one, you're often exporting power back to the grid for a fraction of what it's worth, instead of storing it to use later when you need it most. Whether that trade-off makes sense depends on the household's



Ben Gallizzi, Energy Expert at Uswitch

usage pattern, so it's worth working through the numbers for that specific home before recommending one.

We saw how much is at stake during the recent heatwave. Uswitch analysis found the UK's solar households made around £40 million between them over seven days of strong sunshine (though that figure covers solar generation overall, not a split by who had a battery). Still, a battery is what turns more of that generation into savings instead of exports.





Where heat pump households fit in

Battery storage isn't equally useful to every solar household, so it's worth working out early whether it makes sense for yours, rather than treating it as an automatic add-on, whether you're the one buying it or the one recommending it. It makes the most financial sense for homes that use a lot of energy early morning or evening, or for those with an EV or a heat pump. Both draw a fair amount of predictable electricity outside daylight hours.

One study of retrofitted UK homes found that heat pumps push electricity demand into a sharp evening peak. A 2025 Oxford University study tracking real heat pump installations uncovered that switching from electric storage heaters to heat pumps moved demand away from steady overnight hours and into a concentrated peak between 4pm and 7pm, the same window when solar generation has usually stopped for the day and grid electricity is typically at its most expensive. A battery charged during the day can take some of that evening load. Paired with a time-of-use tariff, it can shift more of a heat pump's running costs onto cheaper overnight rates too.

What's changed on cost

The financial case for storage is stronger than it used to be. Typical battery costs run from £2,500 to £8,000 or more, depending on capacity and chemistry, with lithium-ion now the standard choice for its efficiency and lifespan. Households pay 0% VAT on battery storage until March 2027, whether it's fitted

alongside new panels or retrofitted to an existing system. It has to be bought through an installer for the relief to apply.

Support schemes can help too. The Energy Company Obligation (ECO4) runs until December 2026 and, while it's primarily aimed at solar panels and heating measures, battery storage can be included where a home assessment recommends it. The Warm Homes: Local Grant is gradually replacing ECO4 in England, with equivalent schemes in Scotland, Wales and Northern Ireland. It's worth checking with local authorities directly too, as some councils offer their own grants or low-interest loans for storage.

The financial case for battery storage is stronger in 2026 than previous years. Battery costs have been coming down while grid electricity rates have stayed high, and on top of that, VAT relief and available grants mean the sums add up faster than a lot of customers expect. It's still a high cost to start with, so it's worth being upfront with customers about the payback period for their own setup, instead of quoting a national average that might not apply to their home.

The practical questions

Whether you're weighing this up for your own home or fielding it from customers day to day, a few questions often come up.

First is retrofitting. If you already have solar and you're adding a battery later, it usually comes down to AC or DC coupling. AC coupling works with a suitable existing inverter, which helps with cost and complexity

but leads to slightly more conversion losses. DC coupling is more efficient but needs a new inverter and more involved work. It's worth asking your installer to talk you through that trade-off properly, rather than just accepting whichever's quicker to fit.

Sizing questions come up just as often. As a rough guide, a small flat might only need a 2kWh battery, while a large family home could need 10kWh or more. Usage pattern matters more here than square footage.

Longevity is worth raising too, since it affects how customers think about payback. Most batteries last 10 to 15 years, and how they're treated affects where in that range they land. Keeping them at room temperature, away from lofts and sheds, with good ventilation, and avoiding repeated full discharges to 0%, all help slow degradation.

The advice gap is the opportunity

None of this is complicated once it's explained, but most homeowners arrive at the conversation without having worked through it themselves. That's where installers add the most value: turning a customer's actual usage pattern into a clear answer on whether storage pays off, and on what timeline, rather than leaving them to guess from a national average.

It's also where Uswitch tries to be useful to homeowners as well as the wider industry, publishing our own data and guides on solar, storage and heat pumps as the picture changes. ☺

www.uswitch.com



A partnership built to last:

How North Kesteven District Council (NKDC) is futureproofing homes with Vaillant's aroTHERM plus

North Kesteven District Council (NKDC), in partnership with heating contractors, Equans UK, embarked on a transformative project to upgrade the heating systems in more than 300 of its properties across the region.

With the journey to net zero firmly in place, the initiative aimed to replace outdated and inefficient systems previously installed at the properties, such as storage radiators, solid fuel, and oil-fired heating, with modern, sustainable solutions. The project, which began in August 2023, is part of a wider effort to improve energy efficiency, reduce carbon emissions, and enhance the quality of life for residents and has seen 350+ Vaillant aroTHERM plus heat pumps installed to date.

The Challenge

Many of the properties in NKDC's portfolio had ageing heating systems, with some homes rated as low as F on the Energy Performance Certificate (EPC) scale. These systems were not only inefficient but also costly for residents to operate. While funding from Midland Net Zero Hub required the homes to be improved to a minimum EPC rating of C, NKDC chose to go further, upgrading the properties to achieve at least a B rating on the EPC scale, delivering significant energy savings and improved comfort for residents.

The Solution

Vaillant aroTHERM plus heat pumps and sensoCOMFORT controls were chosen as the cornerstone of the upgrade. The decision



to partner with Vaillant was driven by their reputation for reliability, ease of installation, and compatibility with retrofit projects. The project also included the integration of solar photovoltaic (PV) panels and 2.4 kW battery storage systems, further enhancing energy efficiency and sustainability.

Ahead of work commencing, each property was assessed individually to tailor the solution to the specific needs of the residents and the building's structure. In addition to the

heat pumps and solar systems, some homes received loft and cavity wall insulation to further maximise energy efficiency.

Implementation

The installation schedule was designed to minimise disruption for residents. The project was delivered by Equans UK's skilled installation teams, who completed the upgrades within two days per property, ensuring that residents could remain in their homes throughout the process.



“This project is a great example of what can be achieved when partners work closely together from the very outset, with a shared commitment to delivering the right long-term outcome for residents.”

The previous heating systems were entirely removed, and new systems were installed, including volumisers in place of buffer tanks for easier retrofitting.

Adam Evans, Mechanical Project Manager at Equans UK, said: “Delivering this programme with NKDC has been a fantastic opportunity to demonstrate how low carbon heating can transform existing social housing properties. The simplicity and reliability of the Vaillant aroTHERM plus heat pump made it particularly well suited to a large-scale retrofit programme like this, enabling our teams to complete installations quickly while maintaining high standards, and minimising disruption for residents.

“By combining heat pumps with solar PV and battery storage, we’ve been able to significantly improve the energy performance of these homes while helping residents reduce their energy costs and carbon footprint.”

Equans UK also prioritised resident engagement, hosting open days and inductions to explain the benefits of the upgrades. For residents who were initially hesitant, managers and liaison officers provided one-on-one consultations to address concerns and build trust.

Results

The project has delivered remarkable results:

- **Energy Efficiency:** Most properties now achieve a B rating on the EPC scale, a significant improvement from their previous ratings, which were often below F.

- **Cost Savings:** Residents have reported drastic reductions in their energy bills, with some homes running on as little as 70 pence per day.
- **Comfort:** The new systems provide consistent ambient temperatures, with residents able to adjust settings to their comfort levels. Feedback has been overwhelmingly positive, with an average satisfaction score of 4.9 out of 5.

A strategic partner

Equans UK has extensive experience with various heat pump brands, however, Vaillant stood out for its “plug-and-play” design, which simplifies installation and ensures compatibility with retrofit projects. The support provided by Vaillant’s technical and specification teams, including regular communication, training sessions, and on-site visits, further solidified the partnership.

Steve Cipriano, Commercial Director at Vaillant added: “This project is a great example of what can be achieved when partners work closely together from the very outset, with a shared commitment to delivering the right long-term outcome for residents. By collaborating with NKDC and Equans UK early in the process, and through the support of our specification team on the design of the chosen system, we were able to help develop a solution tailored to the needs of the properties and the people living in them. Together, we’ve

delivered homes that are more efficient, more comfortable, and better equipped to support residents for years to come.”

Adam concludes: “The support from Vaillant has been invaluable throughout this project. Their technical guidance, specification expertise, and on-site training ensured our teams were fully equipped to deliver high-quality installations efficiently. It’s this collaboration that allowed us to bring reliable low carbon heating solutions to residents with confidence.”

The project is far from over, with plans to upgrade an additional 300-400 properties over the next few years. Equans UK has also expanded its efforts to other housing authorities and associations in the East Midlands, including the City of Lincoln Council.

The collaboration between NKDC, Equans UK, and Vaillant demonstrates the transformative potential of sustainable heating solutions. By replacing outdated systems with heat pumps, solar PV, and battery storage, the project has not only improved energy efficiency but also enhanced the quality of life for residents for years to come. ☺

www.professional.vaillant.co.uk/specifiers





From Calculation to Commissioning: An Installer's Heat Pump Journey

Stin Sidhu, Director of KS Connexions shares his move into heat pumps after specialising in solar PV and battery storage.



As the UK heating market accelerates towards low carbon technologies, many electrical and renewables specialists are taking their first steps into air source heat pumps (ASHPs). For Warwickshire-based KS Connexions, that transition has been shaped by experience, careful planning and a strong focus on getting it right first time.

Founded with roots firmly in electrical contracting, KS Connexions has evolved over the past decade into a renewables focused business, specialising in solar PV and battery storage. With more than 10 years' experience installing PV systems, the business made a clear strategic decision over six years ago to move away from general electrical work and focus solely on renewable technologies.

"Solar and battery storage were already a big part of our world," explains Director Stin Sidhu. "When we started looking at air source heat pumps, it just made sense. From our perspective, heat pumps and PV go hand in hand."

"From our perspective, heat pumps and PV go hand in hand."

A collaborative route into heat pumps

KS Connexions' move into heat pumps began through collaboration. A long standing professional relationship with heating engineer Ian Malcolm of Ringgas proved pivotal. Ian had already been working with Baxi and was keen to install ASHPs but wanted support around certification and compliance.

That partnership led KS Connexions into formal training and ultimately into live installations. "We were very conscious that this was new territory for us," says Stin. "So, we took our time, invested in training and made sure we had the right partners around us."

Local support, strong technical backup and a reputation for reliability were key factors in KS Connexions choosing to work with another Warwickshire-based business in Baxi. "Support is everything," Stin explains. "You only really judge a manufacturer when something doesn't go perfectly. Having someone you can call, who really knows the product, is critical."

Building confidence through experience

Since completing their first installation, KS Connexions has completed six to seven ASHP projects, ranging from small two bed bungalows to large five bed detached homes and full renovations.

The team has installed systems from 6kW right up to larger 13kW three phase units, all specified following detailed heat loss calculations. KS Connexions uses Heat Punk software for heat loss assessments, following dedicated training and one to one support to build internal confidence.

"If you get the heat loss survey wrong, everything else falls apart," says Stin. "I'd say I'm more nervous about the heat loss calculation than the installation itself. An installation can be fixed. A badly sized heat pump causes problems forever."

That cautious approach extends to customer conversations too. "If heat pumps aren't right for a property, we'll say so. They're not for everyone, but for the homes where they do work, the results have been excellent."

Planning before fitting

One recurring theme in KS Connexions' journey has been the importance of planning. From choosing the right location for the outdoor unit, to ensuring cylinders can be safely installed, even in loft spaces, the team prioritises preparation over speed.

"We don't rush installs," Stin explains. "If everything is planned properly, a heat pump and cylinder can be installed in a couple of

days. But sometimes it takes three or four days, and that's perfectly fine. Quality matters more than speed."

Experience gained from handling PV panels and large battery systems has translated well into heat pump installations. Site access, lifting, storage and coordination with builders or homeowners are all considered well ahead of installation day.

Why Baxi and why pre plumbed?

After an initial HP40 installation, KS Connexions made the decision to standardise on the Baxi HP60 with pre plumbed cylinders for subsequent projects.

"The HP60 gives us higher flow temperatures, which is really useful across different property types," says Stin. "And the pre plumbed cylinder just makes life easier, from both a plumbing and electrical perspective."

The compact, tidy layout of the cylinder, combined with an easier commissioning process, has also been a major advantage. KS Connexions highlights the Baxi commissioning app as a standout feature.

"The app modernises the whole process. You've got checklists, parameters and controls all in one place. It gives you confidence that everything has been done properly."

Technical support has also played a key role in early installations, with the Baxi team providing on site guidance, wiring schematics and reassurance when needed. "It's one thing learning in a training room," Stin notes. "But real world support makes all the difference."

Looking ahead

Today, KS Connexions is actively growing its heat pump offering alongside PV and battery storage. With increased enquiries coming through their website and advertising, heat pumps are becoming a natural extension of their renewables portfolio.

For installers considering a similar journey, Stin's advice is straightforward: invest in training, get heat loss right, and don't oversell the technology.

"Heat pumps aren't a silver bullet, but where they're right, they work brilliantly. And when you've got the right manufacturer support behind you, that journey becomes a lot easier."

Looking to kickstart your heat pump journey? Sign up for one of our industry-leading training sessions: www.baxi.co.uk/professional/training/heat-pump-training/become-a-heat-pump-installer

No MCS? Let us take care of MCS compliance with our MCS Umbrella Scheme: www.baxi.co.uk/professional/services/mcs-umbrella-scheme ☺

Renewable transport technology is transforming the cold supply chain

Recent years have seen a significant take up of electric vehicle refrigeration by cold chain operators. **Coleen Botterill**, Transport Sales Manager at Hubbard Products, looks at the key drivers behind the growth in the use of electric vehicles and the challenges of encouraging wider adoption along the supply chain.

Transport globally accounts for around a third of all carbon emissions, with road transportation responsible for a significant share of the total. Refrigerated transport in particular plays an essential role in safeguarding perishable supplies end to end, covering the entire cold chain from production and storage to transportation and retail distribution.

As the value and volume of food and pharmaceutical goods transported continues to increase, so does the pressure to look at ways to further decarbonise refrigerated transport and to increase sustainability. Strict legislation focused on the phase-down of hydrofluorocarbon (HFC) gases has fuelled the research and development of low global warming potential (GWP) refrigerants, including natural refrigerant alternatives such as CO₂.

Within the UK and Europe stringent standards have been introduced that aim to reduce fleet emissions in line with net zero targets. In addition, working towards zero emissions is also important to meet growing consumer expectations for sustainability at the retail end of the cold supply chain.

A convincing case for conversion

For operators meeting urban delivery requirements, converting light-duty refrigerated vehicles to an electric platform, or using a combination of technologies, offers a practical and more sustainable alternative for temperature-controlled logistics. This is particularly relevant for last-mile delivery of pharmaceuticals to hospitals and retail pharmacies, as well as for groceries and restaurant supplies.

Grants and funding aimed at encouraging fleet replacement are available for electric van operators. These, plus other benefits such as

access to urban low-emission zones, offer further incentives which are helping to upscale the adoption of electric vehicle solutions.

Inherent flexibility

Modern electric refrigeration units offer reliable, efficient temperature control across a wide range of applications and vehicle types, such as Daikin's portfolio which includes solutions for panel vans, light trucks, and trailer combinations, with systems tailored to meet sector-specific requirements.

Overcoming barriers to adoption

For operators and end users considering new cold chain supply options, cost is a key concern. This applies to both the cost of conversion and ongoing running costs. A key goal is the optimisation of thermal efficiency for frozen logistics and cooling performance.

Reliability and efficiency are especially important in the transport of refrigerated food or pharmaceutical products. Modern electric systems deliver both in an eco-friendly, low noise package.

These advances have done much to overcome fleet operator concerns about the commercial viability of electric refrigeration commercial vehicles (eCRV), putting them on a firm trajectory for future growth.

Understanding the bigger picture

Equally important in moving from all-diesel vehicles towards hybrid or full electric solutions is access to specialist consultancy advice. When it comes investing in transport refrigeration equipment, choosing the right technology is only part of the challenge.

Rather than being offered as a standalone service, giving effective advice requires taking



Coleen Botterill, Transport Sales Manager at Hubbard Products

a wider approach which allows customers to make an informed decision based on operational requirements, rather than simply product specifications.

The consultative approach considers real life operational factors before recommending equipment or system designs, ensuring that the chosen option focuses on the most effective solutions for the application:

- Required temperature range
- Energy efficiency objectives
- Future refrigerant requirements
- Site or vehicle constraint
- Maintenance considerations
- Long term operating costs

Transport refrigeration presents unique challenges that differ significantly from static refrigeration systems. Consultation with customers is also undertaken to evaluate different refrigeration technologies including CO₂ systems, inverter refrigeration, R290 solutions and low GWP refrigerants, helping businesses prepare for changing regulations and future operational requirements.

Additionally, other factors which need to be taken into account according to specific applications include vehicle operating conditions, route profiles, temperature requirements, and fleet efficiency.

As a consultant, Hubbard works in collaboration with both customers and leading body builders to develop tailored solutions that meet these specific cost and

performance objectives, which has proved vital in increasing confidence in the medium and encouraging industry-wide take-up.

As more operators transition to electric vehicles, refrigeration technology must evolve alongside them. Going forward, an integrated approach that involves supplier, vehicle manufacturers and users is essential in addressing the knowledge gap. Modern electric refrigerated van systems are designed to deliver reliable temperature control without compromising vehicle performance or operational efficiency, optimising costs, and cultivating future interest in sustainable cold chain transport options.

Beyond installation

For refrigerated transport fleets, continuous operation is essential. Downtime can quickly become expensive. Product loss, disrupted deliveries, maintenance costs and operational delays can all impact profitability if refrigeration equipment is not properly supported. After sales support starts where installation ends with and should include access to servicing support, maintenance programmes, technical expertise, and replacement components to keep deliveries going.

<https://www.hubbardproducts.com/>

Electric freezer van delivery: Wiltshire Foods

Wiltshire Farm Foods offers an insight into how collaboration between bodybuilder and manufacturer can provide high-performance frozen food delivery through system adaptation and development.

Wiltshire Farm Foods operates a busy home-delivery network, with vehicles typically making 50 to 60 deliveries per route. Frequent door openings can allow warm air to enter the load space, making it challenging to maintain strict frozen temperatures.

When the company made the decision to introduce electric vans into its fleet, it needed a refrigeration solution capable of delivering consistent deep-freeze performance at -20°C or lower, without compromising vehicle range or reliability.

Working together, Vanfridge and Hubbard developed a high-performance electric freezer van based on the Ford ETransit Custom. The vehicle was fitted with the Hubbard Z350e electric refrigeration unit and delivered as part of a rental fleet supplied by Pola Van Rental.

To maximise thermal efficiency and cooling performance, Vanfridge designed a specialist insulated load compartment, featuring:

- High-specification fibreglass conversion.
- 100 mm insulation for improved temperature retention.

- A smaller insulated door to minimise heat ingress during deliveries.

The refrigeration system is powered through a Mastervolt inverter connected to the vans' factory ordered second battery system supplied by Ford, which ensures a continuous energy supply whenever the vehicle is operating.

In daily operation, the Z350e consistently maintains temperatures down to -25°C, even during demanding multi-drop routes with frequent door openings. Crucially, the refrigeration system has a minimal impact on vehicle range, with the power demand of the unit reducing range by just 5-8% in transit.

The electric refrigeration setup also removes the need for any auxiliary belts and power from a vehicle's diesel engine, delivering additional benefits in the form of:

- Reduced noise during deliveries
- Lower running and maintenance costs
- Zero direct emissions during operation

The success of the project has reinforced confidence in electric refrigerated vans as a viable solution for frozen logistics. With businesses such as Wiltshire Farm Foods aiming to increase the proportion of electric vehicles in their fleets in the coming years, solutions like the Hubbard Z350e are helping make sustainable cold chain transport a practical reality. 



Connected, compromised.

Protecting electric vehicle charging systems

Rafael Narezzi, Co-founder and CEO, Centrii, discusses that as EV charging networks become more connected, cybersecurity risks are increasing. Strong security, clear responsibilities and resilient infrastructure are essential to protect users and energy systems.

Requiring strong security measures, EV charging has developed into a complex, interconnected infrastructure.

The threats range from compromised chargers to highly coordinated attacks that could disrupt whole energy systems. On the user side, there is also the risk of payment fraud and phishing attacks.

Recent events show this has become a reality. A ransomware attack on ELECQ, the manufacturer of smart EV chargers, earlier this year exposed customer names, addresses and contact details stored in the cloud, as attackers encrypted and removed user data. ELECQ interrupted the attack as it was underway, restoring systems from backups and closing exposed remote access services, but the incident served as a warning about the risks of cloud-linked systems.

For would-be attackers, the attraction is clear as EV charging networks become part of our critical infrastructure. Links between systems, combined with integrated payment services and cloud connections, make them a compelling target.

Who's responsible?

EV charging also includes specialised hardware components and grid-connected control software, together with cloud-based platforms storing sensitive data. With many different technologies, the opportunity to successfully access one of them undetected is much higher.

It's important that charging network operators and asset owners have full visibility into what their systems are connected to, the software versions they are running – and who has access to them.

It's also important to understand when this responsibility changes hands. A charger, for example, may be in one physical location, but the software, payment systems and maintenance may be controlled by three different companies in three different places. Plus, each one could be covered by different compliance or regulation requirements.

EV charging is increasingly considered to be critical infrastructure, so is required to maintain operational functionality. Cybersecurity policies that generate frequent false alarms, block legitimate charging or require long investigations can cause operational downtime.

To keep things running smoothly, staff may create workarounds but then introduce other risks. If a charger is isolated because it's identified as a security risk, for example, but staff still need access to it, there's a possibility they could reintroduce it to the network before that threat is investigated fully. While the intention is good and only for a short time, it may open up a pathway for attackers.

On the edge

EV charging is often at the edge of commercial deployments. The physical charger is in one place, while the internal

Rafael Narezzi, Co-founder and CEO, Centrii



technology connects back to a central data centre or cloud platform. This physical distance can make it more difficult for operators and asset owners to get visibility into what is happening at the physical site. A critical file change or an unauthorised process might be missed if the operator only sees what's happening with the charger itself.

Workarounds and edge security can introduce legitimate security risks that operators must understand to protect their assets. If they don't understand how their charging networks are performing, they cannot understand the potential financial impact to their business.

When it comes to the cost, what's the potential revenue loss to an operator if a charger does go down? Users will almost certainly prioritise reliable access over lower cost, so having a charging station offline where and when it's needed most could have a huge implication for the business.

As EV charging infrastructure evolves, the possible risks will do the same.

We have seen plans by Chinese carmaker BYD to invest in ultrafast charging in Europe. While the concept of 'flash charging' is appealing, it changes the nature of EV infrastructure and the risk profile. If enough chargers are activated or disabled, the resulting surge could resemble sudden loss of a power station, or worst-case, could destabilise our electricity network.

We must view any new developments like this carefully, focusing on security and resilience and not just charging speed. A security-first first should always be a priority. 🌱

<https://centrii.com/en/>

NOW IN GLASGOW
& WETHERBY

BEIJER REF UK
ACADEMY

TRAINING FOR A Sustainable Future

Courses designed by engineers for engineers



Customer Review



After an unsuccessful experience with an online F-Gas renewal course from another provider, we decided to research alternative training facilities and came across Beijer Ref Academy.

We enrolled our Senior F-Gas and Renewables Engineer onto the 2-day F-Gas course. He is not an engineer who is easily impressed and has extremely high expectations when it comes to training standards — however, Beijer Ref Academy **exceeded** those **expectations** completely.

The feedback from the course was practically perfect. The training was delivered by an excellent tutor who was knowledgeable, approachable, and incredibly helpful throughout. The facilities, course structure, and hands-on approach were all first class.

The experience was so positive that we have already booked another engineer onto the full 5-day course. As a well-established heating and cooling company, we would have no hesitation in recommending Beijer Ref Academy to anyone looking for high-quality F-Gas or renewables training.

Comment by: **Rian Lewis** from **MJ Ryder**

F-GAS CAT 1
5 DAY COURSE
ONLY £1095
Qualification City & Guilds 2079-11 F-Gas Category 1
Full course details are on our website
BOOK ONLINE
beijerrefacademy.co.uk

F-GAS RENEWAL COURSE
for experienced engineers
City & Guilds 2079-11 F-Gas Category 1
2 Day training
ONLY £775
BOOK TODAY!
beijerrefacademy.co.uk
BEIJER REF UK ACADEMY

BOOK YOUR COURSE TODAY

1 Day Courses - **£395**
2 Day Courses - **£775**
5 Day Courses - **£1095**

See all available courses on our website
beijerrefacademy.co.uk

People power:

Developing skills for a changing industry



Jamie Nesbitt, Operations Director at CES Power, explores why developing people is becoming just as important as developing technology as temporary power becomes more technically complex.

On a live event site, there is little room for trial and error. Power needs to be delivered where it is needed, when it is needed, and remain reliable as conditions change. Behind the generators, distribution equipment and increasingly sophisticated power systems are the people responsible for making those decisions.

As expectations around how power is delivered continue to change, the technology available to customers is evolving too. However, better technology does not automatically deliver better results. It needs people who can select the right solution, understand how different systems work together and respond when the reality of a project does not match the original plan.

For the next generation entering the industry, technical knowledge is only the starting point. They need the confidence to solve problems, adapt to changing conditions and make informed decisions in environments where the stakes can be high. Developing those capabilities will be critical to making the most of the technology available to them.

Learning beyond the classroom

Classroom learning provides an essential foundation in a technical industry, but understanding how equipment works is only part of what is needed to deliver temporary power in practice. Equipment behaves differently depending on its environment, and demand can change throughout a project.



Jamie Nesbitt, Operations Director at CES Power

When something does not go according to plan, decisions often need to be made quickly.

At CES Power, apprentices split their time between college and working at the company's depots, where they learn from experienced members of the team and gain practical experience with temporary power equipment. The business has also started taking apprentices to live events, allowing them to see how power is installed and managed in environments where reliability is critical.

A technician may need to assess changing demand, identify a potential issue and work with colleagues to find a solution, all within a tight timeframe. Developing that judgement requires more than theoretical knowledge. It comes from seeing how decisions play out in real situations.

From training to real-world experience

Apprentice **Daniel Carberry** is an example of what this approach can offer.

During his first year at CES, Daniel has gained certifications including forklift operation and fuel tank testing, while beginning his IMI Level 3 Land-Based Engineering course. Alongside his studies, he has worked across CES depots, tested temporary power equipment and supported major events including Leeds Festival.

Daniel Carberry receiving real-world experience



The contrast between those environments has given him experience of different sides of the industry. In a depot, equipment can be examined and tested in a controlled setting. On a live event site, the focus shifts to delivering a reliable solution around tight schedules, practical constraints and the needs of multiple teams.

It also means understanding what happens around the equipment itself, including how site requirements shape the solution and how teams respond when circumstances change.

For someone at the beginning of their career, that experience can build confidence while helping them understand where their technical skills might take them, whether into events, industrial power, construction or another part of the sector.

As Daniel has put it, his time at CES has given him “qualifications, opportunities, and confidence”, while helping him understand the different career paths available to him after his apprenticeship.

Preparing for a changing industry

The value of that experience is becoming more apparent as the technology used in temporary power evolves.

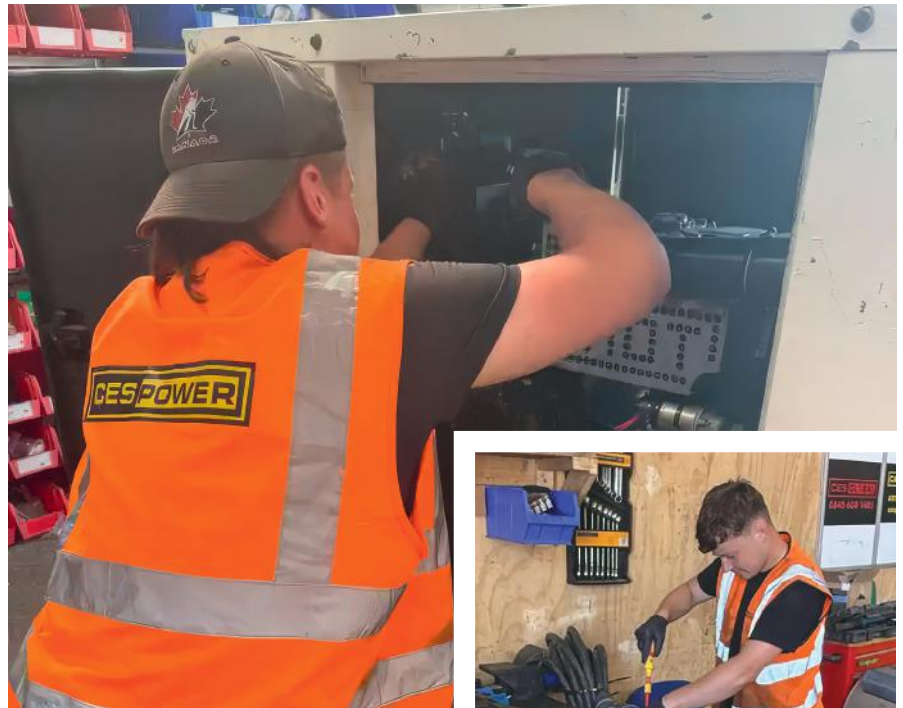
More efficient generators, battery storage and remote monitoring are giving operators greater control over how power is produced and consumed. But they also introduce new decisions about how systems should be designed and managed.

Consider a site where demand varies throughout the day. A conventional generator may provide all the required capacity but spend long periods operating below its optimum level. Combining generation with battery storage can provide a more efficient solution, but only if the team designing and operating the system understands the site’s demand and how the different components need to work together.

The same applies to operational data. Remote monitoring can provide a detailed picture of equipment performance and energy use, but that information is only useful when someone can interpret it and decide what action to take.

The industry’s skills requirements are changing. The role increasingly involves understanding how a complete power system behaves, recognising opportunities to improve its performance and making decisions based on what is happening on site.

As customers look beyond simply securing enough power, those capabilities will become increasingly important. They want solutions that are reliable and efficient, while also being able to demonstrate their environmental performance.



Investing in the next generation

For businesses operating in a rapidly evolving industry, investing in people alongside technology is becoming essential.

CES currently has 10 apprentices across its UK programme, with the business continuing to develop opportunities for young people to build careers within the sector. The programme has already received external recognition, with CES named Best New Employer by Newcastle and Stafford Colleges Group.

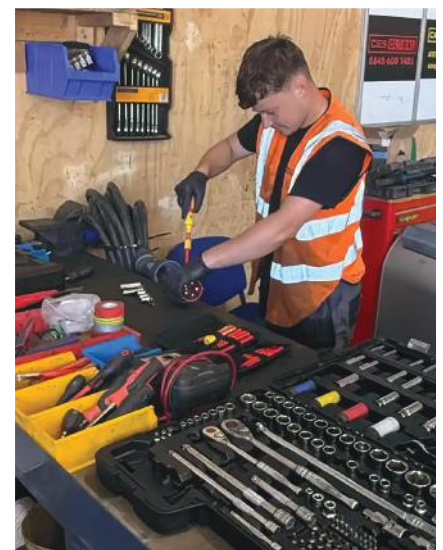
The ambition is not simply to create a pipeline of technicians. CES is looking at how apprenticeships can expand into areas including sales and support functions, reflecting the range of expertise required to deliver temporary power successfully.

Projects depend on more than technical teams alone. Engineers and technicians need to work alongside project managers, customers, suppliers and support functions, with each playing a role in planning and delivering a successful project.

Developing the future workforce means building expertise across the business while helping people understand how their individual role contributes to the wider project.

Valuing technical skills

That focus on practical skills reflects a wider conversation about how the next generation is prepared for work. There is growing recognition that technical and vocational education has an important role alongside traditional academic routes, particularly in industries where specialist knowledge needs to be applied in real-world environments.



For sectors such as temporary power, this is particularly important as the skills required become broader. Future workers will need a combination of technical knowledge, practical judgement and the ability to work alongside different teams as projects become more complex.

People make the technology work

As temporary power evolves, customers will expect more efficient systems, greater visibility over performance and increasingly sophisticated approaches to reducing emissions. Delivering those outcomes, however, will depend on the people behind the technology.

For the next generation, an apprenticeship should be more than a route to a qualification. It should provide the technical foundation, practical experience and confidence to make good decisions when the pressure is real.

As temporary power becomes smarter and more complex, investing in the people behind that technology will be just as important as investing in the technology itself. 

<https://www.cespower.com/uk/index>

Renewable energy fundamentals

Paul Drew, Director at Smart Energy Training, looks at the rapidly changing energy landscape – and the challenges it poses to the training industry.

It is no secret that the UK desperately needs skilled tradespeople as the country moves towards a low carbon future.

Technologies such as air source heat pumps (ASHPs), electric vehicles and solar panels have been around for a while now – but demand is set to boom in the years to come as the impacts of the government's Net Zero ambitions start to take effect.

The UK has an estimated 4,000 to 10,000 trained heat pump installers, with around 2,000 of those working full time. While those figures are rising, the UK needs around 33,700 full-time heat pump installers to meet short-term targets and approximately 70,000 by 2035.

Of course, it's not just heat pump installers that are required. The country also needs engineers to fit and maintain EV charging points, solar panels and more.

It can be daunting to look at these figures, but at Smart Energy Training we see the renewable energy sector as a great opportunity for exciting, profitable careers – both for existing engineers who are willing to re-skill, and for brand new people coming into the industry.

The older members of the workforce, generally speaking, are not interested in learning new skills. They have enough work and repeat customers to satisfy them until retirement. Our own research shows 27% of our target audience is retiring in the next five to 10 years.

But the younger generation can absolutely see the career benefits of renewables and low carbon technology, both those who are already working in the trade and those who are not. We have seen huge demand in air source heat pump training recently, and EV and solar installation is gathering momentum too.

We would anticipate air conditioning training to increase in demand as that becomes more normalised in this country.

Generally, people will focus on one discipline and become an expert in that field, but there are crossovers. For example, we run a dual air source heat pump and F-Gas qualification as the skills are similar. We've seen some people focus on gas in the winter and air source heat pumps in the summer.

Where the industry is lacking when it comes to training is, in my opinion, not actually a shortage of centres or even training places – it's quality. There is a gap between the number of people qualifying as low carbon engineers and those going on to work in the industry. There may be many reasons for that, but I believe part of it is a lack of confidence after qualification.

As a business, we are expanding Smart Energy Training at pace so that we can offer standardised, quality training in multiple locations across England and Wales right throughout the year. We utilise the experience and skills of some of the best renewable energy trainers in the country to ensure our learners leave their courses ready to hit the ground running, either as sole traders or working for employers.

At Smart Energy Training, we are committed to delivering the very best learner and employer experience at every touchpoint. It's important that as we scale, the high quality we are renowned for doesn't change. Every new centre, every new programme and every partnership has to meet that same benchmark.

What has become very clear to us is employers don't want learners who are just qualified on paper – they want people who can add value from day one. That means combining technical skills with practical application and commercial awareness.

While our focus will always be on quality in-person training across our centres nationwide, we are also ensuring our offering remains up-to-date by investing in eLearning. A new Director of eLearning has recently started with us, focussing on AI-enabled learning and immersive environments.



Paul Drew, Director at Smart Energy Training

But it's not just about technological understanding and technical ability. Having listened to the employers we work with, we also focus on soft skills – such as communication, business understanding and customer interaction – which help to make apprentices useful to a business right from the off.

We can also embed an employer's specific requirements into a programme. For example, recently we started a new relationship with an employer that has specific customer service values and wanted those embedded into the course. This goes well beyond the basic behaviours usually part of the learning and includes things such as having a clean van and personal presentation.

We go beyond traditional classroom-only delivery. Our approach is built around a cycle of learn, apply, reflect and embed, using real equipment, real scenarios and repeated practice.

It's the difference between understanding something once and being able to do it consistently on site. This is an area where the industry still has an opportunity to improve, particularly in helping newly qualified engineers build confidence in real-world installation. As we grow, we are determined to maintain that quality.

The traditional college model of fixed term starts, long breaks and inconsistent delivery isn't fit for modern trades.

We're replacing it with a model that works for employers: monthly starts, consistent delivery, no downtime and immediate impact.

Geographical expansion is an important part of our strategy. Ultimately, we want to offer accessible, high-quality training within 20–30 miles of every installer – and we are well on the road to achieving that in a controlled, sustainable manner. We are acquiring good quality, established businesses and pushing them forward by putting the Smart Energy Training stamp on them, backed by our ever-growing team.

The transition to Net Zero will ultimately be delivered by skilled engineers working in homes and businesses across the UK. Developing that workforce is one of the industry's greatest responsibilities, and one that Smart Energy Training is committed to supporting for the long term.

Solar Photovoltaic (PV) Systems

A recent acquisition has allowed us to offer apprenticeship units for small scale solar photovoltaic systems, which is a huge step forward for us.



Both levy and non-levy payers can access funding. Non-levy payers make a contribution, otherwise it's fully-funded.

We'll be able to offer these qualifications in most of our centres as we continue to grow. Solar is such an important part of the future and UK housebuilding, with roof-top panels now commonplace in most new builds as standard as legislation develops.

The training covers everything from design, installation, commission and maintenance, allowing the learner to develop the understanding and practical skills to build a successful career in solar.

Electric Vehicle charging

Demand for EV chargers in the UK is set to increase very substantially between now and 2030, driven by rising EV ownership, government policy and the fact that the charging network still needs to catch up.

We offer a five-day EV charging installation programme covering installation, maintenance and servicing funded through the apprenticeship levy.

It covers installation, maintenance and servicing and is in high demand with housebuilders and electricians.

The servicing angle means tradespeople with EV skills can benefit from repeat custom after the installation has been completed, helping to build a consistent income stream over many years.

Heat pumps and low carbon heating

Heat pumps and low carbon heating is where we have seen the most uptake for our programmes so far in 2026.

The country still has a long way to go to reach the government's target of 600,000 installations a year – but there are signs that demand is increasing annually.

The Boiler Upgrade Scheme (BUS) has been a major driver. It provides grants towards heat pump installations, and the level of support has been increased, with grants of up to £7,500 available for many installations. The scheme has now supported tens of thousands of installations since launching in 2022.

Every heat pump installation is different, particularly if it is a retrofit job, which is why courses major on system design as well as installation and commissioning.

There is also a focus on electrical connections, radiator sizing, improving efficiency, fault finding and best practice.

There has been huge development in low carbon technology in recent years, with systems getting smaller and more powerful. There is also an acceptance that modern technology can be integrated into existing systems, with new and old supplementing each other, rather than everything being ripped out and starting from scratch. 🌱

<https://www.smartenergytraining.co.uk/>



The road to net zero is not a one-horse race



Heat pumps, solar, battery storage and cooling are reshaping the building-services sector, but installers need sustained demand and policy certainty to gain confidence in skill investment, says **Harry Budd**, Marketing Manager from Logic4training.

The transition to low-carbon buildings is changing the face of our sector and therefore the skills expected of heating, plumbing and electrical professionals. While the direction of travel may be clear, the journey is still far from smooth. The take-up of renewable technology training in particular is widely influenced by government policy (good and bad), and this is reflected in our own candidate data over the past seven years.

Overall, however, backing building services is definitely a safe bet. Largely AI beating, forever in demand with entry points from school leavers onwards, it's easy to see why it is considered the most lucrative area of the trades – HVAC in particular came out on top for earning potential in a recent survey by Tradify.

There's room for everyone!

The industry's recruitment challenge is substantial. The UK Trade Skills Index indicated that at least 70,000 new plumbers would be required by 2032, while BESA reported that 66% of employers were experiencing shortages in skilled installation and maintenance roles.

School-leavers and apprenticeships remain important, but adult profession switchers are becoming a significant source of new talent.

Logic4training's figures show that nearly 3,000 potential career changers¹ retrained in the trades between 2021 and May 2026. Some 94% were aged 25 or over, with almost half aged between 30 and 49. The 30–39 age group is now our largest cohort in both electrical and plumbing training.

This suggests the trades are gaining attention from adults who want more



Harry Budd, Marketing Manager from Logic4training

secure, practical or commercially resilient careers. For would-be employers, older new entrants often bring useful transferable skills, including customer service, project management and business experience.

Plumbing appears to be a particularly attractive route: Logic4training recorded an almost sevenfold rise in plumbing certifications between 2022 and 2025. Gas training is also drawing more mature candidates, with learners in their 30s overtaking those in their 20s during 2025.

Heat-pump skills depend on market confidence

Heat pumps remain central to the decarbonisation of home heating. The UK has passed 250,000 certified installations, with current deployment estimated at approximately 8,000 to 10,000 systems per month. The latest ambition is to reach 450,000 installations annually by 2030.

Meeting that level of deployment will require a much larger workforce. Heat Pump Association analysis suggests the market could support an additional 110,000 full-time-equivalent jobs by 2035. At the moment, however, training does not necessarily translate into an active installation business.

In 2024, 9,062 people completed a recognised heat-pump qualification, but the reported drop-off between those trained and those actively installing was 39%. This

A Logic4training solar pv class working on a solar panel



is where 'start at home' style schemes, such as the ones we support with Alto Energy and Grant UK, are so important, providing installers with much needed real-world experience (and a free heat pump!)

Our heat-pump candidate numbers peaked in 2023, following the Boiler Upgrade Scheme (BUS) and ECO4 launch and the introduction of the Heat Training Grant in 2022, before falling by approximately 46% over the following two years.

Several factors may be involved: policy uncertainty, slower-than-anticipated deployment, uneven regional demand and the saturation of the earliest adopter group. ECO4 was scrapped this year, but without the Warm Homes Plan properly in place, leaving some businesses vulnerable to an empty order book.

With the Future Homes Standard (FHS) around the corner, the heat pump market in new builds is set to rise, hopefully leading to period of greater stability in the run up to Net Zero. Installers now need confidence that consumer interest will persist beyond individual schemes or policy announcements.

Traditional and renewable skills will coexist

The transition to net zero is sometimes framed as a choice between gas and low-carbon heating, but the data points instead towards a prolonged period of coexistence.

Approximately 23 million UK homes - around 80% - are still heated by gas, and more than one million new and replacement boilers are installed each year. Demand for our gas training has remained stable over the years, with our Managed Learning Programme (MLP) route peaking in 2022 and 2025.

At the time of writing, gas boilers are still currently being installed, and while this is dropping off (after March 2027, no new build planning applications will include them), gas engineering remains an important source of employment and a route into the wider heating industry. The most valuable heating engineer is someone able to work on existing systems while helping customers move towards low-carbon alternatives.

Solar and battery markets are moving, but new standards make it harder to upskill

Solar PV has become one of the strongest areas of domestic renewable deployment. The UK added 269,000 installations in 2025 and passed two million installations in March 2026.

Battery storage is developing alongside it. MCS recorded 36,000 certified battery installations during the first half of 2026,



Heat Pump training area

nearly double the previous year's rate. Around 80% of new domestic solar systems are now reportedly installed with a battery. Zero-rated VAT has further supported the market.

In our training centres, we saw solar and battery courses peak in 2024. Changing eligibility requirements may be part of the explanation for a temporary slowdown (Level 3 qualifications are now only suitable for experienced, ECS Gold Card electricians). We have since updated our own new entrants' electrical route to reflect this change.

EV-charging qualifications show a comparable pattern, with candidate numbers falling after 2022. This could indicate that an initial wave of specialists has already trained, that provision is being consolidated into broader qualifications or that a larger share of work is being delivered by national operators rather than sole traders and small businesses.

Don't be fooled by the lull, however. Becoming an electrician guarantees work now and, in the future, with electrification one of the key drivers towards net zero.

Cooling is becoming a major opportunity

There is one piece of the HVAC jigsaw puzzle that is experiencing a massive boom outside of any policy incentives as a direct result of climate change, and that's F-gas qualifications; a requirement of some, usually larger, heat pumps, and crucially of air conditioning.

The UK's warmer summers, which are felt most keenly in our unsuitably built homes and some workplaces, are increasing interest in mechanical cooling. Consumer demand for residential AC installation was reported to have risen 63% year on year in the third quarter of 2025. During summer 2026, searches for UK homes with air conditioning increased by

104%, while 61% of surveyed respondents said they would consider installing it.

Training patterns reflect this expansion. Logic4training's F-gas candidate numbers rose from around 280 in 2021 to 505 in 2025. By the end of August 2026, a further 408 candidates had trained with demand outstripping course places.

The rise of the multi-skilled installer

Across the sector, low carbon heating, plumbing and electrical systems are becoming more closely connected. The FHS, clean-heat policies and support for household energy upgrades under Warm Homes will reinforce that shift. Workforce planning cannot be based on policy ambition alone, however. Installers require stable demand, accessible training and qualification pathways that recognise their existing experience.

Training data indicates that the appetite to adapt is present - over the last seven years we have expanded our own offering to meet demand, including new courses, apprenticeships and most recently a new centre, bringing Logic4training to the Midlands². Adults are entering the trades in significant numbers, established engineers are considering renewable technologies and fast-growing markets such as cooling are creating new opportunities.

The building services sector is definitely the horse to back, but savvy installers should be hedging their bets. [G](#)

www.logic4training.co.uk

Source

1. Trainees undertaking 'new entrants' courses in gas, plumbing and electrics.
2. Logic4training acquired Xtra Skills in Coventry

3t launches Aberdeen's first Power Academy to build the next generation of power-sector talent

3t, a safety-critical training provider for the energy sector has officially launched its new Power Academy in Aberdeen, creating Scotland's first independent training provider-led facility of its kind dedicated to specialist power-sector training.

Located at 3t's training centre in Aberdeen, the Academy has been developed in partnership with Siemens Energy to support the development of the technical skills required across Scotland's electricity infrastructure as it continues to scale.

The first cohort of five apprentices employed by Siemens Energy began their training on 21 September, marking the launch of a new apprenticeship pathway for substation fitting in Scotland.

The five apprentices are working on SSEN Transmission projects as part of the business's plans to upgrade the electricity network across the north of Scotland.

To mark the launch, **Stephen Gethins**, Scotland's Minister for Europe, External Affairs and Energy, visited 3t's Aberdeen training centre, where he met the inaugural apprentices and took part in an engaging Q&A session focused on the importance of developing a skilled, homegrown workforce to support Scotland's energy future.

Gethins said: "Scotland's energy transition presents a generational opportunity to create

high-skilled jobs across the country, as we build the workforce required to deliver a more secure, and more affordable energy future for Scotland and Europe. That means investing not only in the infrastructure itself, but in the people who will build, maintain and operate it.

"The launch of 3t's Power Academy is a positive example of industry investment in workforce development, alongside the broader investment being made through our Offshore Wind Skills Programme, which is investing in initiatives designed to strengthen skills pathways and increase the supply of talent into key offshore wind occupations. By providing apprentices with access to high-impact, hands-on training, this Academy will help equip the next generation with the skills they need to build successful careers in the power sector."

Jamie Purves, Managing Director, 3t Training Services UK, said: "Working alongside our partners, we've created a

one-of-a-kind training environment that can provide apprentices with the skills and hands-on experience needed to support the future of the UK's power systems.

"As the first independent training facility in Scotland, the academy will not only fill a critical skills gap, but will also help develop the workforce required to strengthen grid resilience, support infrastructure investment and power the country's energy transition. And, this is just the first step - we're already developing a wider range of short courses and upskilling programmes to support the power sector as a whole."

The Academy represents a significant investment in specialist equipment and infrastructure, including a dedicated substation facility at 3t's Aberdeen site. The environment gives apprentices access to practical, industry-standard training that would typically be associated with network operators' own internal training facilities.

"Working alongside our partners, we've created a one-of-a-kind training environment that can provide apprentices with the skills and hands on experience needed to support the future of the UK's power systems."

It expands a model already delivering strong growth from power and utilities customers at 3t's Manchester training centre, creating new apprenticeship pathways and strengthening the skills base behind the UK's electricity infrastructure.

The launch comes as Scotland and the wider UK continue to invest heavily in electricity networks to accommodate growing energy demand, electrification and the transition to a lower-carbon energy system. Developing the workforce required to deliver and maintain this infrastructure is increasingly critical.

Apprenticeships are a vital part of building the skilled, homegrown workforce Scotland needs to support growth of the sector, and 3t is committed to working closely with government and industry partners to strengthen apprenticeship pathways in Scotland, ensuring the pipeline of skills keeps pace with the scale of investment in the country's energy infrastructure.

Darren Davidson, Vice President Siemens Energy UK and Ireland, commented on Monday's launch: "These are the first Siemens Energy Grid Technology apprentices in Scotland and we are delighted with our collaboration with 3t as we continue to grow our role in Scotland's energy transition."

Across the UK we have now approached 650 apprentices, of which around 150 are starting their apprenticeship journey this month."

Rob McDonald, Managing Director of SSEN Transmission, said: "SSEN Transmission's investment to upgrade the electricity network across the north of Scotland is one of the largest infrastructure programmes in the region's history, and its success depends on having the skilled workforce needed to design, build and maintain the grid for decades to come."

"That's why initiatives such as 3t's Power Academy are so important. By creating high-quality apprenticeship opportunities and developing specialist skills close to where they're needed, we can help more people build rewarding careers in the energy sector, while ensuring local communities share in the economic benefits of the transition to a cleaner, more secure energy system." 

www.3tglobal.com



WHAT'S NEW

Watts Microflex® HP: An All-in-One Connection Solution for Faster, Simpler Heat Pump Installations

Available now from Watts, Microflex® HP is a complete, pre-insulated piping solution designed to simplify connections between external heat pumps and buildings. Purpose-built for heat pump applications, including air-to-water monobloc systems, Microflex HP combines heating and cooling flow and return pipes with dedicated conduits for mains and control cables, all within a single protective outer casing.

Created to make heat pump installations faster, neater and easier to manage on site, Microflex HP provides a single route for heating, power and control. Its lightweight, highly flexible construction makes the pipe easy to handle and route around corners and obstacles, while compatible accessories can be installed without special tools. Bringing the water pipes and cable conduits together also means only one wall entry point is required, helping installers create a straightforward, space-efficient connection between the heat pump and the building.

Microflex HP incorporates two PE-Xa heating and cooling pipes with an oxygen diffusion barrier alongside two conduits for power and network cables. Closed-cell PE-X foam insulation around the carrier pipes helps minimise heat loss and has minimal water absorption, while the robust, UV-resistant PE-HD double-wall outer casing protects the pipes and insulation from external impacts. Its closed-chamber construction also helps prevent water ingress should the outer surface become damaged.

Designed with challenging installations in mind, Microflex HP can accommodate bending radii from just 0.3m, depending on pipe size, giving installers more freedom to route connections around obstacles and into buildings. The range is available with PE-Xa carrier pipes from 25mm to 40mm, is suitable for both heating and cooling, and has a maximum operating pressure of 6 bar and a maximum constant medium temperature of 85°C, with a peak temperature of 95°C. Watts also offers compatible connection kits and can cut Microflex HP to size free of charge, helping reduce waste and ensuring the required length arrives ready for the project.

Microflex HP forms part of Watts' wider range of solutions for air-to-water heat pump installations, alongside pump groups, controls, hydronic components, balancing valves, magnetic filters, pressure gauges, safety valves and backflow prevention products. Together, these solutions support efficient, reliable heating and hot water systems across new-build and retrofit applications.

www.wattswater.co.uk



WATTS®

OFTEC offers registration for off gas grid technologies



EVERYTHING YOU NEED TO KNOW ABOUT DIVERSIFYING INTO HEAT PUMPS

As we continue the transition towards a low carbon future for domestic and commercial heating, there's never been a better time for technicians to expand their skill set and enter the heat pump market. With financial support available and growing demand from consumers, the industry is evolving and it's an opportunity to future proof your business. So, here are five things you need to know about diversifying into heat pumps, so you don't miss out.

1. Training grants are currently available

One of the biggest barriers for small businesses and independent technicians is the upfront cost of training. The good news is there's currently significant support available. Under the government's Heat Training Grant, which had its funding renewed by the government in April, technicians in England can benefit from a discount up to £500 towards training on the installation of air or ground source heat pumps, and also on system design when taken with an installation course. This makes diversifying more accessible and affordable. While the scheme currently applies only to England, we're hoping to see similar support options for Scotland and Wales.

2. More technicians are diversifying

Uptake of heat pump training has seen steady growth in recent years. Over 5,000 technicians have already completed heat pump training through OFTEC, with many of these benefitting from the grant funding. As

David Knipe, Technical and Training Manager at OFTEC



a result, the number of qualified installers is increasing across the industry, demonstrating a clear appetite among technicians to upskill. If you've been thinking about expanding your service offering, there is a clear and growing heat pump market.

3. Tailored courses to fit your business

OFTEC currently has over 40 centres offering our heat pump training courses. Over half of these also offer liquid fuel training, so you may already be familiar with them. This means it's easier than ever to find a local provider.

All OFTEC heat pump and liquid fuel assessments are UKAS accredited to operate under ISO 17024 requirements which means you know you will get a quality assessment at the end of your course providing you with valuable individual practical experience. Once you are awarded certification to an ISO 17024 accredited assessment you are then entitled to get direct entry into OFTEC's competent

person scheme with the on-site evaluation to take place with-in three-months.

4. Futureproof ahead of the Warm Homes Plan

There may be a temptation to take a 'wait and see' approach but early adopters can secure a competitive edge by joining the market now. In the current economic climate, we don't know whether the government will keep renewing the heat pump training grant indefinitely so don't miss out on the chance to futureproof your business.

5. Your one-stop shop for registration

OFTEC offers registration for all the major off-grid heating technologies from heat pumps, renewable liquid fuels to solid fuel. Combined with our MCS registration scheme, technicians can put themselves in prime position for however the off-grid market evolves.

With OFTEC, you can benefit from a comprehensive offering of certification, technical advice, ongoing CPD, training and industry insights all under one roof. Get in touch with us to learn more about diversifying your business into heat pumps.

- Call our team on **01473 626 298**
- Email us at **registration@oftec.org**
- Visit the OFTEC website **www.oftec.org/unlock-new-opportunities-with-heat-pump-training-and-registration-with-oftec/**



**Future
proof your
business!**



Find out more

Build your future in heat pumps

Whether you're entering the heat pump market or looking to expand your services, OFTEC provides the training, registration and ongoing support to help you stay compliant, attract customers and grow your business.

Expert training you can trust

Access courses delivered through a network of OFTEC approved training centres:

- ✓ **OFT21-504A** – Installation, commissioning and servicing of air source heat pumps.
- ✓ **OFT21-504G** – Installation, commissioning and servicing of ground source heat pumps.
- ✓ **OFT21-504D** – Design of heat pump systems.

Stand out from the competition

OFTEC offers registration across a wide range of scopes:

Liquid fuel | Solid fuel | Heat pumps | Solar heating | Biomass
Electrical (Part P) | Non-operative | TrustMark | MCS | PAS2030

www.oftec.org



A New Era of Heat Pump Systems. For Every Home. For Everyone.

VITOCAL 200-A intelligent energy

The new, compact monobloc heat pump generation from Viessmann.



- Reduced weight
- Intelligent Energy Management
- Fast and flexible installation

ONE BASE
intelligence



Find out
more now