

Happy New Year, and welcome to Adveco's January newsletter,

January is all about getting a fresh start, so we begin with a new, CIBSE approved CPD seminar that addresses the design of DHW using heat pumps. It's a chance to learn more and avoid the pitfalls of an increasingly important technology taking us towards the UK's target net zero status, which is now just 25 years away. So we also look at the challenges and the opportunities facing the building industry, HVAC and DHW in particular as we begin the year and how Adveco is working to help our partners achieve project decarbonisation goals. Once such case is the restoration of a solar thermal system on the central London roof top of Bird & Bird offices. Finally we look at the impact of new higher risk building (HRB) legislation, with particular focus on DHW systems.

Thank you for following us, we have exciting plans for 2025, and you can read all about them here every month...



Adveco Offers New CPD – Designing Commercial Hot Water Systems Using Heat Pumps

Adveco has expanded its range of CIBSE-approved continuous personal development (CPD) seminars with a new presentation on best practices for designing commercial hot water systems using heat pumps.

As commercial and public sector organisations endeavour to reduce carbon emissions from their building stock through new build or retrofit projects, applying heat pumps as a core technology response has become increasingly common. However, the complexity and particular demands of delivering domestic hot water (DHW) systems for commercial properties with heat pumps are not without their challenges. This new hour-long CPD offered by Adveco is intended to lead consultants, specifiers and contractors through the methodology behind the correct design of air source heat pump (ASHP) based water heating.

Vince Ng, business development manager at Adveco said, "Attendees will learn how to minimise the size and maximise the efficiency of a heat pump-based hot water system. This is critical for reducing capital expenditure, lowering energy consumption and addressing environmental concerns, creating real, working, low-carbon hot water systems that customers will more readily accept."

The CPD begins by outlining the differences between low-energy/high-storage systems used with air source heat pumps and traditional high-energy/low-storage hot water systems. Adveco then shows how to design heat pump-based preheat systems, comparing heat pump pre-heat and heat pump water heating systems, and exploring designing high-temperature heat pumps as water heaters.

Attendees will also gain insight into new refrigerants employed in commercial-grade ASHPs, and other heat pump technologies including CO₂.

"Adveco is committed towards the continued growth of knowledge and experience of professionals in the commercial build and sustainability sectors," Added Vince. "On completion of this CPD seminar attendees should gain an understanding as to why and how, through better system design, you can minimise the size of the ASHP to reduce outlay costs, maximise the efficiency of the ASHP to reduce energy consumption and be able to create systems based on a choice of mainstream, accessible and well-understood technologies."

This water heating design with heat pump seminar is offered free and can be presented at your facility or online.

CIBSE APPROVED CPDS



Solar Restoration

Bird & Bird is a specialist international law firm consulting on business operations, including innovation and adaptability in businesses, corporate social responsibility and environmental sustainability.

With environmental sustainability being a core practice of this business, in 2016, Bird & Bird chose to invest in upgrading its London offices. Rather than replacing the existing calorifiers which supply domestic hot water (DHW) and were already facilitating all staff and building requirements, they opted to enhance the system and introduce greater sustainability by adding a renewable energy option, commissioning the installation of solar thermal panels on their roof to supply system preheat, offsetting energy demands and reducing the building's carbon footprint.

Trusall Ventilation Ltd, an air conditioning company was contracted by CBRE, a commercial real estate services and investment consultancy, to manage the acquisition of these solar collectors, and

ensure the system's successful design, installation and operation. Previously impressed with its product range, technical applications and advice, Trusall selected commercial hot water specialists Adveco to design and provide technical assistance for the purchase, and commissioning of the solar collectors.

In Spring 2024, Trusall contacted Adveco for urgent assistance when due to high winds and ferocious storm conditions, a solar panel became damaged and needed urgent replacement. Circumstances such as this can be rare but possible and a fast resolution was required, not just to reinstall the damaged product but also to ensure the correct safety health and safety conditions for the entire building, occupants and surrounding areas.

Following consultation with Adveco's applications engineering team, recommendations were made to replace the damaged solar panel and further support the continuing running of the panels.

First, a new solar collector along with a mounting frame, was required. Adveco's latest generation solar thermal flat plate collectors run efficiently to reduce energy demands, operational and maintenance costs, while reducing carbon emissions. A much-needed application as we head towards a zero-carbon target year of 2050. The prefabricated mounting systems mean that these are ready to install instantly, without the need for further adjustments. This replacement panel also included a new connector to the existing array.

A further recommendation was for a complete replacement of the solar fluid across both the installed systems, which had now been operating for more than eight years, without refreshing this critical system element. Solar Thermal systems work by collecting solar energy as heat in a glycol fluid that passes through the copper tubing running through the collector. Gravity then carries the fluid to a storage vessel where the heat is transferred via a heat exchanger (a coil) in the cylinder, pre-heating the system water. Glycol needs to be regulated in the collector as it has the potential to overheat, causing it to boil and be converted to a damaging tar-like consistency. This is avoided in Adveco's solar thermal system through the inclusion of drain back units on the collectors. The compact drain back component ensures smoother operation, ultimately leading to longer-lasting use and improved return on capital investment. The fluid will provide efficient operation for many years but does require regular checks and eventual replacement, which was the case for the Bird & Bird building.

With the successful installation of the new collector, drain back units checked and fluid replaced, both systems were recommissioned.

Through the combined efforts of Trusall and Adveco, there was a swift resolution to this unexpected occurrence. Particularly, with this Bird & Bird project, Trusall and their client CBRE considered that "Adveco's prompt response and advice was very helpful, and they were pleased with the replacement solar thermal collectors and commissioning that was completed, with everything meeting the needs and demands of this extremely busy office building".

For any company looking to incorporate solar thermal for domestic hot water for more sustainable building operations Adveco can provide technical design, product supply and commissioning. For installers wishing to add solar thermal to their portfolio, Adveco offers product training and onsite engineering training for first installs.

25 Years And Counting To Net Zero - The Challenges and Opportunities



Despite global efforts, the world is still far off track to limit global warming to 1.5°C above preindustrial levels, as outlined in the Paris Agreement. 2024 was a record-breaking year for global temperatures, with several months surpassing the 1.5°C warming limit set by the Paris Agreement, marking the first time global temperatures have consistently exceeded this threshold for an extended period.

While the Paris Agreement aims to limit global warming to "well below" 2°C, with an aspiration of 1.5°C, the 1.5°C limit is seen as a crucial threshold to avoid the most severe impacts of climate change. Exceeding this limit, even temporarily, highlights the urgency of reducing greenhouse gas emissions and accelerating climate action.

Addressing a building's water heating demands is a proven and accessible means for any organisation to begin the process of decarbonisation. But the increasing complexity to navigating the landscape of commercial water heating means organisations should carefully consider their specific needs, explore available technologies, and seek expert advice to make informed decisions. Adveco, remains the specialist in this space, embracing sustainability, efficiency, and innovation, working in partnership with our customers and enabling them to contribute to a low-carbon future.

We now stand 25 years from the national goal of net zero, with a year set to be defined by efforts to achieve greater efficiency and better conditions within buildings predominantly through the integration of low-carbon and smart technologies.

The commitment to net-zero emissions has led to stricter energy efficiency regulations, incentivising the adoption of high-efficiency water heating systems. This is especially the case in commercial new builds where there continues to be growing interest in heat pumps for water heating. Rapid return on investment is also increasing adoption of solar thermal systems to supplement traditional heating sources. The combination of carbon reduction with heat pumps and operational savings with solar thermal is also gaining traction in the retrofit space as a sustainable addition or alternative to traditional gas boilers.

Gas boilers, though currently reliant on fossil fuels, continue to develop at an unprecedented pace,

demonstrating both greater efficiencies to reduce carbon emissions as well as offering crucial lower operating costs. For existing properties with a gas connection, the technology still offers a viable alternative and represents a proven stepping-stone toward next generation green gas alternatives likely to come into play 10 to 15 years from now.

Hydrogen-blend ready boilers are available now offering a futureproof choice for water heating while the potential of hydrogen as a low-carbon fuel source is being explored. Looking further forward, the next generation of commercial-grade hydrogen-ready boilers will help accommodate any future shifts in the energy landscape.

The increasingly complex response to domestic hot water (DHW) demands across the commercial built environment is not only being shaped by the way energy is harnessed, but also in the way that it is monitored and controlled to deliver precisely controlled working and leisure environments which optimise energy usage. Smart controls and connected devices which enhance the capabilities of building management systems (BMS) are revolutionising remote self-monitoring to deliver greater protection, predictive maintenance, and optimised energy use. This will further help address carbon emissions as well as helping address Indoor Air Quality (IAQ) necessary for healthier work and living spaces.

Commercial buildings will often require large volumes of domestic hot water for variety of applications across every sector. But these hot water applications, as a significant component of commercial operations, present unique challenges in the UK's low-carbon transition.

Traditional gas boilers, while efficient, will contribute to carbon emissions. Heat pumps, while a promising alternative, may not be suitable for all applications, especially in high-temperature and high-demand scenarios. And new low-carbon technologies will often have higher upfront costs compared to traditional, familiar gas boilers. This can be a barrier for businesses, especially small and medium-sized enterprises unable to take advantage of current boiler replacement schemes.

There is also considerable technical complexity when installing, but also maintaining these systems. That require specialised expertise which remains challenging to find. When systems do transition toward the new, such as the increased electrification of hot water, wider concerns regarding grid capacity constraints and costs of connection come into play. These can very quickly derail a project's aspirations.

Last, but not least, addressing water quality and Legionella risk remain key requirement in large commercial water systems, requiring careful management and further complicating the task.

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Of course, addressing water quality and Legionella risk also remain a key factor of large commercial water systems, requiring careful management and further complicating the task.

Adveco is perfectly positioned to assess, advise, recommend, provide and manage the process of securing lower-carbon water heating. Whether managing existing systems, transitioning to new, or starting completely fresh. Every location, every building has its own unique challenges and Adveco has experience developing the right response. Simply adopting new technology is not always the right or only answer. In fact, new technologies come with a host of potential issues and problems due to a lack of familiarity, and despite the many claims there currently is no single silver bullet technology that has all the answers.

As an independent hot water design specialist and supplier, Adveco is positioned to support the integration of renewable energy sources, such air and solar, with DHW systems to reduce reliance on fossil fuels. We have also embraced a hybrid approach, combining traditional boilers with heat pumps or other renewable technologies, for versatile and efficient applications that help to reduce the reliance on fossil fuels while controlling capital and operational investment.

Adveco is also one of the best positioned organisations to aid in meeting the challenges associated with energy storage and grid integration. Better, more integrated system design and enhanced, smart controls are without doubt one of the best ways to control electricity grid demands, achieving more with less. How that energy is then stored and deployed is the most critical element of a sustainable system. For DHW applications this energy storage is addressed through use of cylinders, the batteries of efficient, sustainable hot water applications. Adveco offers the most comprehensive range of cylinders in the UK, able to meet low-cost off-the-shelf needs alongside the most complex, bespoke project needs.

All this is backed by Adveco's own designed or carefully selected ranges of award-winning water heating technology, including gas and electric water heaters, heat pumps, solar thermal systems and a wide range of system ancillaries, packaged hybrid systems and complete plantroom offerings.

Approached sensibly and intelligently, by adopting low-carbon, energy-efficient DHW system technologies and optimising operations, Adveco can help organisations throughout the UK meet their sustainability goals and reduce their carbon footprint. Reducing energy consumption and carbon emissions, helps contribute to improved overall building performance, occupant comfort. It can also enhance an organisation's sustainability credentials.

They can also make significant energy cost savings, often enough to quickly offset initial investment costs and deliver long term savings.

The UK's commercial HVAC market in 2025 is a complex and evolving landscape. By addressing the challenges and embracing emerging trends in DHW, Adveco is playing a vital role in achieving the UK's net-zero goals while ensuring the comfort and productivity of commercial buildings.

NET ZERO & WATER HEATING

Water Heating In Higher Risk Buildings



In the aftermath of The Grenfell Tower fire in 2017 one of the key recommendations of the Inquiry was the introduction of new legislation to improve the safety of higher risk buildings. The HRB Criteria refers to the occupation phase and the Building Safety Act 2022 introduced a number of new requirements for the design, construction, and management of HRBs. In fact, the legislation updates all building regulations to include differing levels of safety for buildings more than 18m tall or 10m deep.

These requirements include:

- A new regulatory framework for building safety: This framework will be overseen by the Building Safety Regulator (BSR), who are responsible for ensuring that buildings are safe and that building regulations are complied with.
- New duties for building owners and managers: Building owners and managers will be required to carry out regular safety checks on their buildings and to take action to address any safety risks.
- **New powers for the BSR:** The BSR will have new powers to inspect buildings, issue enforcement notices, and prosecute those who fail to comply with the law.
- New requirements for the design and construction of HRBs: Buildings will need to be designed and constructed in a way that reduces the risk of fire and other safety hazards.
- New requirements for the management of HRBs: Building owners and managers will need to have systems in place to manage safety risks and to ensure that residents are kept safe.

Fire regulations in particular have been upgraded, covering the means of escape, fire ratings of walls, limitation of the spread of fire and sprinkler systems. In addition, recommendations were made to give Fire & Rescue services new powers to inspect buildings and to take action to address safety risks. There was also a requirement identified for building professionals to be properly trained and competent to carry out their work.

Under the new regulations, no work on a project can progress until approved by the BSRs who are required to assess submitted building plans. Response times once all project details are submitted to the BSR portal can be as much as 20 weeks, if changes are then made to the original submission the legislation will require a complete resubmittal and reassessment by the BSR. As there are currently some 200 BSRs in England required to assess all new and refurbishment work, build

programme timeframes have been extended, in some cases adding as much as a year to 18 months to a project.

As a result, procurement has changed, becoming far more linear, with the design phase agreed upon and locked down early in the process. The traditional evolution of a building design, which could evolve over the programme has changed.

Changes to a design, especially internal works which traditionally could see as much as 15% of the original design be amended before final delivery, are no longer viable. So there is a greater onus on consultants and contractors to work in conjunction with suppliers at the earliest stages of the process to ensure regulations are met and project delays are not incurred.

Higher Risk Buildings and Water Heating

New regulatory oversight enables BSR with the power to inspect buildings, issue enforcement notices, and prosecute those who fail to comply with regulations. This increased scrutiny extends to hot water systems, specifically Part G (Sanitation, hot water safety and water efficiency) which HRBs must adhere to more strictly.

As with all commercial and residential properties water fitting regulations apply to all premises with a mains water supply, including HRBs. They set standards for the design, installation, operation, and maintenance of water fittings, including hot water systems. The regulations emphasise the importance of water safety, which includes measures to prevent Legionella bacteria growth in hot water systems.

Of note are the requirements placed on Gas Water Heating and the installation of flues or appliance ventilation ducts which, if they penetrate compartment walls or floors should exhibit a fire resistance (REI) that is a least half of the compartment wall or floor. Metal wall flue offers a fire rating of 30 minutes. So a compartment wall, and an external wall is classed as a compartment wall, therefore must have a REI of at least 60 minutes. For all buildings over 30m tall, and for some situations in buildings over 18m tall or under 10m deep flue through compartment walls will not be allowed under the new legislation.

As we have discussed for new HRBs or significant alterations to existing ones, building control approval is required. This process involves detailed scrutiny of the proposed hot water system design, ensuring it complies with regulations and safety standards. Those involved in the design, installation, and maintenance of hot water systems must be competent and qualified to ensure work carried out on HRBs is of the highest standard.

Building owners and managers of HRBs are required to conduct thorough risk assessments, including those related to hot water systems. This ensures that potential hazards, such as scalding risks, are identified and mitigated through the installation of safety devices, such as thermostatic mixing valves (TMVs) to control water temperature, mandatory in HRBs to prevent scalding. Regular maintenance and inspections of hot water systems are also crucial to ensure their safety and efficiency. HRB regulations emphasize the importance of these checks.

HRB legislation in England has significantly raised the bar for the construction and maintenance of higher risk buildings. By prioritising safety, compliance, and regular checks, the aim is to prevent accidents and ensure the well-being of building occupants.

It has never been more important to consult with qualified professionals and adhere to the latest building regulations and guidance when working on hot water systems in the UK, so talk to Adveco as early as possible with regard to your commercial project's needs.

ADVECO APPLICATION DESIGN



Bespoke hot water application design and supply for commercial buildings - HEAT PUMPS - SOLAR THERMAL - ELECTRIC BOILERS - LIVE METERING - CYLINDERS - PACKAGED SYSTEMS - PLANT ROOMS - GAS WATER HEATERS -01252 551 540 enquiries@adveco.co Adveco.co

Sustainable Hot Water



FUSION

Adveco's FUSION packaged electric water heaters offer a range of lowcarbon, all-electric applications for commercial projects with a wide choice of pre-sized variants combining ARDENT electric boiler, cylinder, ASHP, controls and immersions.



ADV16-30W ASHPs

The ADV-W air-to-water heat pump range includes 16, 22 & 30kW (3 phase) and 10, 12, & 16kW (single phase) models that bring quality and efficiency to commercial domestic hot water systems. The ASHP can provide hot water output up to 60°C throughout the year for 55°C working flow.



ARDENT Electric Boiler

ARDENT is designed to serve as an indirect water heater or heating system. Wall-hung and oorstanding variants for those seeking to avoid a reliance on gas energy supplies. In hard water areas the ARDENT electric boiler can be used to dramatically reduce the costly build up of damaging limescale.

FIND OUT MORE

Adveco 2025 Product Guide

Get the handy guide to Adveco's current product range for 2025

2025 PRODUCT GUIDE





Discover Adveco's expanding range of low carbon and renewable products

<u>Live Metering</u>
<u>Solar Thermal Systems</u>
ADV16-30W ASHP
ADV65-110W ASHP
<u>FPi R32 monobloc Air Source Heat Pump</u>
<u>L70 Air Source Heat Pumps for larger projects</u>
FUSION packaged electric water heaters
<u>Electric Boilers</u>
Hot Water Cylinders, Indirect Water Heaters, Calorifiers & Buffers
Commercial Gas-Fired Water Heaters
<u>Standalone Heat Recovery from Chillers</u>
Offsite Constructed Packaged Plant Rooms
Premium Chilled Water Systems

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