Welcome to Adveco's November newsletter,

This month, we look at why the humble stainless steel cylinder should be seen in a new light, as the foundation for sustainable hot water systems. We also take a deep dive into the UK's efforts to introduce sustainability into commercial buildings as we break down the evolving market, the role of traditional and new technologies and consider the wider European imperatives to achieve net-zero targets by 2050.

But first, we are pleased to announce that we have once again been shortlisted in the 2025 HVN awards for Best Commercial HVAC/Heating Product of the Year. We were the winner last year with FUSION, this year, the ADV-W heat pump range for commercial DHW applications takes centre stage later this month.

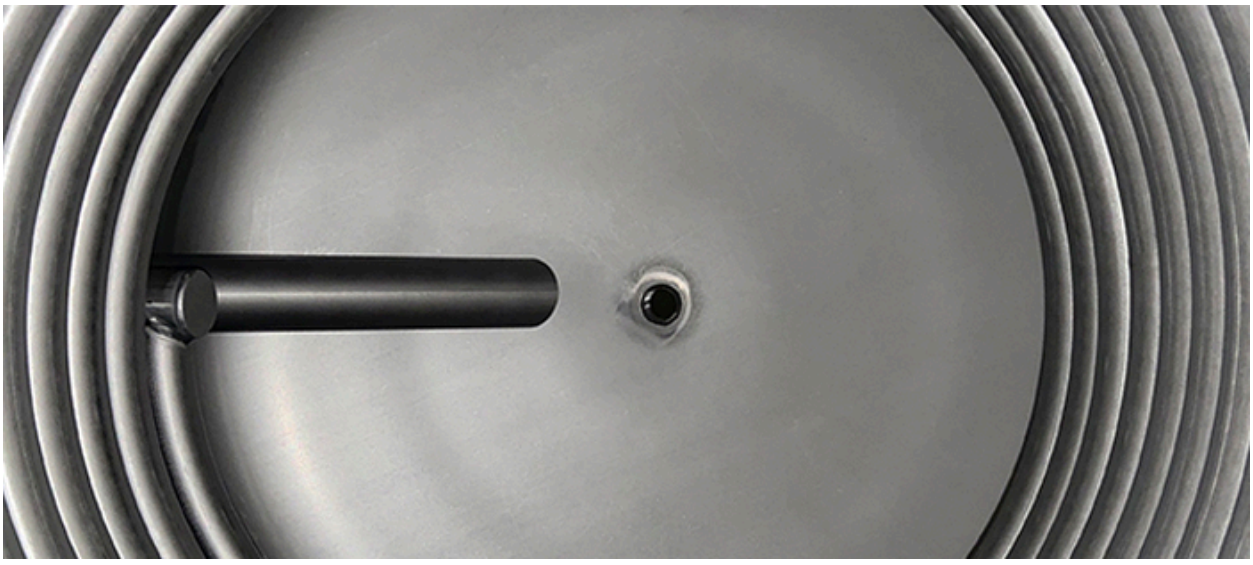
But not to be outdone, FUSION TW has also been named a finalist in the Energy Saving Awards 2025, again in the commercial heating product category. The results will be announced in early December, and we are hoping for an early Christmas present.

We wish all the finalists the very best of luck...

SoPHE are also delighted to be able to invite you to its upcoming Best Practices for Designing Commercial Hot Water Systems Using Heat Pumps CPD with Adveco. Vince will be presenting at RCDC Ltd, London, on Wednesday, 5 November from 18:00 – 19:30 GMT. The seminar is free to attend, but space is limited, so please reserve your place...

SOPHE CPD TICKETS

Stainless Steel Indirect Cylinders – The Foundation of Sustainable DHW



Adveco considers the importance of opting for stainless steel cylinders as the foundation for sustainable commercial plant room-based domestic hot water applications...

A plant room-based hybrid approach, which separates heat sources from the water storage, remains the most cost-effective, proven method for obtaining low-carbon water heating in commercial buildings. These systems deploy renewable or low-carbon preheat, typically provided by Solar Thermal and increasingly Air Source Heat Pumps (ASHP), combined with top-up electrical heating – although many existing properties do still take advantage of lower cost to operate gas connections – for their high temperature water heating.

Such systems need to smartly blend these varied sources of water heating, ready to be distributed to basins, sinks, showers and baths. The process of blending heat takes place in the indirect cylinder, which acts as a highly efficient 'battery' in the larger-scale domestic hot water (DHW) applications required by commercial buildings. The cylinder, or calorifier as it is also known, provides a readily available reservoir of hot water that addresses daily consistent and peak demands.

It's a crucial element of the system, combining lower temperature pre-heat and higher top-up heat to achieve the necessary 65°C safe operating system temperatures. Filled with cold water, the large, insulated tank incorporates dual heat exchanger coils, which connect to the heat sources. As hot water circulates through the coils, it transfers heat to the surrounding water in the cylinder. System controls will manage this process to maximise the efficient operation of pre-heat and top-up heating. The system's overall efficiency is also enhanced as the insulated cylinder minimises heat loss. The stored water stays hot for longer, which in turn reduces the need for frequent reheating. With reduced load placed on the heat sources, system energy demands and therefore carbon emissions and operational costs come down and operational lifespan increases.

Available in a range of storage capacities, indirect cylinders can also be connected in parallel to further increase capacity for larger-scale or high-demand applications. For applications requiring consistently high hot water flow, additional capacity becomes an absolute necessity for low-carbon applications based on ASHPs. The increased specification of heat pumps, especially in new build, has notably driven a resurgence in undersized system storage, especially in like-for-like replacement of gas water heating, as larger thermal storage is now required to offset slower reheating provided by ASHPs after periods of peak demand.

Modern commercial buildings will also utilise unvented hot water systems, operating at mains pressure, to deliver high-powered hot water flow necessary for large-scale applications such as showers, laundry, and dishwashing. One of the major issues faced by UK businesses using unvented hot water applications is the damage caused by the passage of mains water. In harder water areas, this is typified by the creation of limescale. In very hard water areas, this has seen high heat intensity immersion-based direct water heaters scale up and become unusable in a matter of months. This has massive implications in terms of ongoing maintenance and replacement costs.

Because the indirect cylinder employs heat-exchangers, the water that is heated, especially by the higher-temperature top-up sources, circulates in a sealed 'primary' loop that never actively mixes with the mains water, which will pass around the wider system. With the boiler heating the same water continuously, there is only a small, finite amount of scale in the system, which will not damage the elements. The heat exchanger in the cylinder is a large coil operating at a relatively low (80°C) temperature. By controlling temperatures through the indirect method of water heating, limescale build-up can be essentially eliminated.

Soft water can be equally destructive, unless stainless steel indirect cylinders are employed. These boast exceptional resistance to soft water corrosion. When exposed to mains water, the metal forms a passive film of chromium oxide, which acts as a robust barrier, shielding the underlying metal from further corrosion. This inherent resistance to corrosion and the strength of the alloy make it ideal for unvented systems, which necessitate cylinders that can withstand significantly higher pressures. Stainless steel ensures safe and reliable operation, which translates to a longer lifespan for the cylinder, minimising replacement costs and downtime associated with failing equipment. The alloy's smooth, non-porous surface also inhibits the growth of bacteria and other microorganisms. In commercial settings, hygiene is paramount, making stainless steel indirect cylinders particularly critical for hot water systems used in hospitals, hotels, and food service establishments.

The preferred use of stainless steel, larger capacity tank and dual heat exchanger does mean indirect cylinders for low-carbon commercial DHW does result in a higher initial upfront cost compared to direct traditional heating systems. That expense is more than recovered over the extended lifespan of the system, with more simplified and reduced maintenance demands. Crucially, using a dual-coil indirect cylinder helps address many of the current complexities faced when integrating ASHPs, especially into existing buildings. They can also allow for later integration if

a business has a more stepped approach to rolling out sustainability through the incorporation of ASHP or solar thermal at a later date.

The ability to combine a stainless steel indirect cylinder with both ASHP and boiler, particularly the compact electric variety, also enables DHW systems to be sized down by as much as half in terms of ASHP requirements. This delivers immediate capital savings as electric boilers are far less expensive compared to an equivalent heat pump, which helps offset the initial costs of the cylinder.

ATSX STAINLESS STEEL CYLINDERS

SSX STAINLESS STEEL CYLINDERS

Water Heating In The UK

Adveco presents research providing an overview of the UK's commercial water heating market, establishing the baseline against which all future decarbonisation efforts will be measured...

Traditional & Trusted -Commercial Water Heating Overview and Context

The UK commercial water heating market is a significant sub-segment of the broader non-domestic heating sector, which includes space heating and industrial process heating. While precise, standalone market data for water heating is limited, it is a critical component of the overall heating demand for commercial premises such as offices, schools, healthcare facilities, and hospitality venues. The UK Space Heating Boilers Market was valued at approximately £273 million in 2024 and is projected to reach £380 million by 2032, growing at a CAGR of 3.97%.[1] The commercial application segment contributes around 26% of this market, with industrial use at 13% and the residential sector leading at 61%.[1] This market is distinct from the broader UK Water Heater Market, which was valued at £611.8 million in 2023 and is projected to reach £812 million by 2030, representing a substantial total addressable market.[2]

A fundamental challenge in assessing this market lies in the collection of data, which often conflates space and water heating. The data from various reports focuses on "space heating boilers," frequently assuming dual-purpose systems providing both space heating and domestic hot water. The reality is that these systems and approaches to specifications are more likely to be separated in commercial contexts. This means that a comprehensive market view requires synthesising information from multiple, imperfect sources. This data limitation highlights that

public and private reports often focus on larger, more easily quantifiable segments (such as boilers) rather than granular, end-use categories (like hot water).

Non-Domestic Buildings & Retrofit

According to the Department for Business, Energy, & Industry Strategy (BEIS) there were 1,755,000 recognised non-domestic buildings in England and Wales at the end of March 2024. Many of these buildings will have been constructed to lower energy efficiency standards and currently account for 23% of the UK built environment's operational emissions, of which as much as 30% can be attributed to ageing domestic hot water (DHW) systems.

Of these buildings, just 14.6% were constructed after 1996, and considering the rates of new construction, it is easy to see why the UK Green Building Council (UKGBC) estimates that 80% of buildings that exist today will still be here in 2050.[3] The vast majority (86%) of organisations underestimate the need to retrofit such buildings to make them more energy efficient. Over a third mistakenly believe less than 39% of the UK's current building stock will still be in use by 2050. [3]

Due to a large majority of businesses occupying old, inefficient buildings that have failed to receive necessary retrofitting, major changes are required for the UK to avoid failing to reach the government's current net-zero target in 2050. 31% of organisations fear retrofitting's disruption, 29% lack the bandwidth for such a project, and 25% don't know how to make a business case for it. [3] Organisations need expert support and clear advice to correct misconceptions. For instance, 45% of those in charge of buildings believe if the grid is carbon neutral, they don't need to worry about getting their buildings to net zero. While 24% feel that retrofitting won't make a big enough difference to their building's carbon footprint. This is blatantly not the case, as a move from gas to electric water heating alone can make a considerable impact on carbon reduction. Lack of government action is perceived as a key problem, and Conservative and Reform parties are arguing that goals need to be reduced or dates revised as enthusiasm for sustainability wanes.

The Status of Gas-Fired Water Heating

Despite the push for decarbonisation, gas-fired boilers remain the undisputed dominant force in the UK's commercial heating landscape. Gas-fired boilers hold an approximate 72% market share within the UK Space Heating Boilers Market in 2024, a position solidified by the country's established gas network, user familiarity, and lower operating costs.[1] This is further supported by the fact that roughly 85% of UK homes are connected to the gas grid, which provides a useful proxy for the prevalence of gas infrastructure across the country.[4]

The market is mature. Most commercial buildings remain gas-connected and will have used a gas water heater, a tried and trusted technology that continues to offer a lower cost – in terms of capital and operational expenditure – means of meeting high temperature demands seen in commercial organisations. Consequently, a high proportion of new sales will be replacements for older systems. The widespread replacement of aging, non-condensing boilers with more efficient condensing models (which hold a 68% share in 2024) demonstrates a shift towards improved energy efficiency, but it does not yet represent a fundamental transition away from fossil fuels. This trend is not unique to the commercial sector; gas boilers are installed at a rate of roughly 1.7 million units per year across all sectors, far outpacing the adoption of heat pumps.[5]

This has meant that, despite the drive for decarbonisation, like-for-like retrofit continues to be

popular. The advantage at least is that the latest generation of gas water heaters offer greater efficiency when burning gas and transferring heat to water, through improved construction of the burner and heat exchanger and smarter operation that maximises heating to hot water demand and reduces lost heat in flue gases. Given that existing systems will have long operational lives, replacing them with anything new is advantageous for all involved.

The installation of a new gas boiler, even a high-efficiency one, locks a commercial property into fuel dependency for the unit's lifespan, which is around 15 years. Current generation condensing devices will accept up to 20% hydrogen blends without requiring physical alteration. Hydrogen-ready units require parts replacement but would then accept transition to full hydrogen connections. As such, devices are seen as a bridge towards emergent green energy. This assumes hydrogen adoption on a national scale that would support commercial connections. European projects have demonstrated that the purchase of green hydrogen is currently expensive (more so than grey hydrogen), so it would require new subsidies to encourage adoption. This does create a policy and investment risk for asset owners who might be forced to replace a relatively new system prematurely should future regulations or national energy decisions change. Currently, within the commercial space, there is no longer a plan (originally set to be introduced in 2035) to ban the sale of new commercial gas boilers for installation in existing commercial buildings. Under the Future Homes Standard, commercial new build installations, however, are already denied a gas connection, mandating low-carbon heating and hot water systems.

Market Segmentation and Dynamics

The market's structure is influenced by regional and application-based factors. England, with its dense urban populations and established gas infrastructure, dominates the market with a 58% share. Scotland and Wales, with colder climates and different heating needs, follow with 17% and 13% respectively. The commercial sector's 26% share is driven by uptake in schools, offices, and healthcare facilities, a crucial distinction as different building types have varied heating and hot water demands, influencing the technical viability and cost-effectiveness of alternative solutions.

The market's momentum is tied to the high replacement demand for an enormous existing fleet of gas boilers. Given that there are approximately two million commercial premises in the UK, the vast majority of which rely on gas, a significant portion of annual sales are simply like-for-like replacements. This means a large part of the market's activity is not new growth but rather a renewal of formerly carbon-intensive infrastructure. To break this cycle, a powerful external force is required, which explains why government policy is so central to the decarbonisation plan. Gas boiler manufacturers continue to recognise the demands for high efficiency replacements, with focus on hydrogen-blend capable and hydrogen-ready boilers and water heaters capable of acting as a bridge to emerging technologies, in particular green gas, but also supporting system integration with low-carbon and renewables capable of limiting natural gas demands. [6]

The Rise of Sustainable Alternatives

Recent Installation and Sales Trends

The UK heat pump market has demonstrated a significant acceleration in recent years, reaching pivotal milestones in 2024. Factory-gate sales data from the Heat Pump Association (HPA) indicates that 98,469 hydronic heat pumps were sold in 2024, representing a substantial 63% increase over the previous year.[7] This growth was particularly pronounced in Air-to-Water (A2W) monobloc sales, which rose by 64%, and in the "other heat pump" category, which saw a 100% growth.[7]

A complementary but distinct picture emerges from the Microgeneration Certification Scheme (MCS), which tracks certified installations for small-scale projects. The MCS recorded nearly 60,000 certified heat pump installations in 2024, marking a 43% increase compared to 2023.[8] This positive trajectory continued into the first half of 2025, with a new record of 30,000 certified heat pump installations completed, a 12% increase on the first half of 2024.[9]

A notable finding from the market data is the significant disparity between the number of units sold at the factory gate and the number of installations officially certified by MCS. The HPA's own data acknowledges that MCS notifications account for approximately 60% of total sales. [7] This means that over a third of heat pump sales in the UK are not captured by the official certification and data-tracking framework. This segment of the market may include larger commercial installations that fall outside MCS's small-scale scope, projects in new-build properties that are not eligible for the Boiler Upgrade Scheme, or installations conducted by non-MCS certified companies. The existence of this parallel market highlights a fundamental gap in the statistical understanding of the sector and raises questions about the quality and standards of installations that are not linked to the MCS quality assurance framework.[10] The data suggests a growing "organic" market driven by factors beyond direct government grants, which may represent a more resilient growth pathway for the sector.

UK Performance in a European Context

Despite the robust growth observed domestically, the UK's heat pump market still lags significantly behind its European neighbours when viewed from a per-capita perspective. In 2024, the UK sold just 3.5 heat pumps per 1,000 households, an adoption rate that is more than 14 times lower than Norway's 48.1 heat pumps per 1,000 households.[11] Similarly, the total stock of heat pumps in the

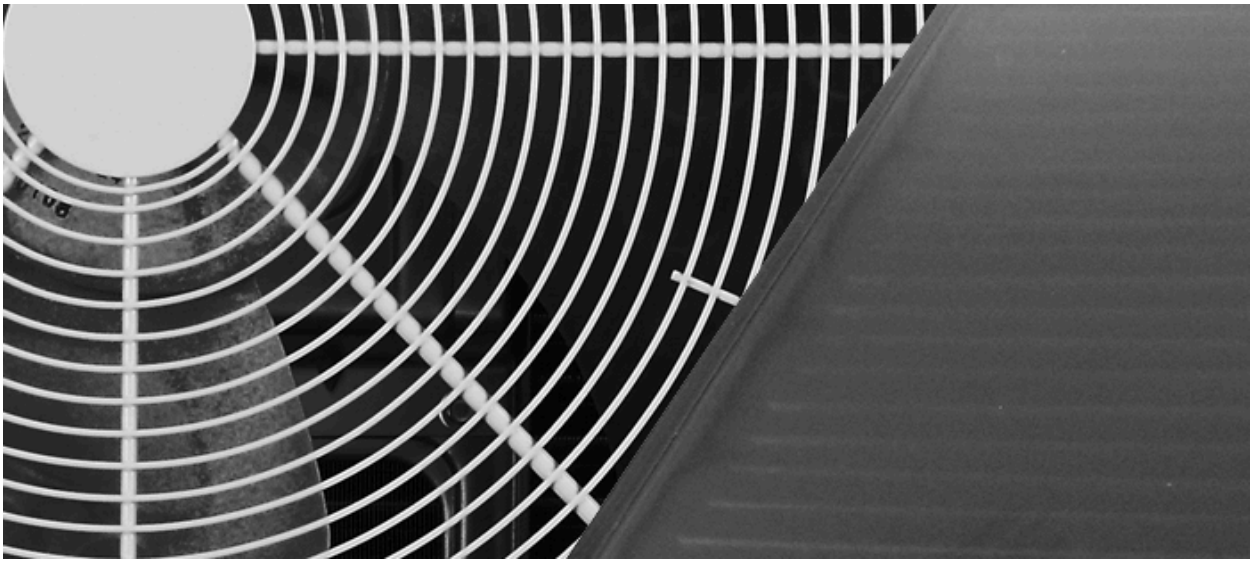
UK, at 19 per 1,000 households, places it last in the European Heat Pump Association (EHPA) ranking, with Norway and Finland leading the way at 632 and 524, respectively. [11]

This data presents a situation where the UK is simultaneously a "poor performer" historically, yet one of the fastest-growing markets in the world in 2024. [11] This is not a contradiction, but rather a pattern characteristic of a nascent market entering a period of rapid acceleration. The high growth rate demonstrates that policy reforms and economic conditions, such as the increase in the Boiler Upgrade Scheme (BUS) grant and the volatile cost of fossil fuels, have been effective in stimulating a previously stagnant market. It indicates that the UK market is far from saturated and possesses immense potential for future growth. If this momentum can be sustained with ongoing policy support, the UK has the opportunity to rapidly close the adoption gap with its European peers in the years to come.

Technological Breakdown and Applications

The MCS data confirms that heat pumps, alongside solar panels and battery storage, are primary contributors to the record-breaking uptake of small-scale renewable technologies in the UK. An earlier government study on non-domestic properties found that only 5% of buildings surveyed had a heat pump installed. This finding, combined with the fact that 79% of those users reported satisfaction with their system, highlights the vast potential for future adoption across the commercial sector.[12]

A review of the legacy Non-Domestic Renewable Heat Incentive (NDRHI) scheme reveals a distinct technology mix. From the scheme's inception to its closure in March 2025, solid biomass boilers accounted for 77% of the 22,703 accredited installations, with ground source heat pumps representing 12%.[13] This historic preference for biomass boilers, particularly on off-gas-grid properties, stands in contrast to the current market focus, which is seeing a surge in heat pump applications under the Boiler Upgrade Scheme.[14]



The Cornerstones of Decarbonisation

Air Source Heat Pumps (ASHPs)

ASHPs are presented as a cornerstone of the UK's decarbonisation strategy [15], but their adoption is a complex narrative of rapid growth from a small base. The market is growing quickly, with UK heat pump installations experiencing a 40% increase in 2024 and a 20% increase in 2023.[16] However, these high-percentage growth rates can be deceptive. Despite this momentum, heat pumps remain a small fraction of the market. Data indicates that gas boilers are installed at a rate of 1.7 million units per year, which is roughly 45 times the number of heat pumps sold annually.[17] The European commercial air-to-water heat pump market was valued at £2,067 million in 2023 and is projected to grow at a CAGR of 21.4% [18], a growth trajectory that is being fuelled by stringent building energy performance standards and mounting measures to reduce dependency on fossil fuels.[19]

The primary impediment to wider adoption is the significant upfront cost. While domestic heat pump systems can range from £5,000 to £18,000, the figure "skyrockets with commercial systems".[16] This significant cost differential makes a compelling business case for heat pump installation more likely for "successful commercial enterprises" with sufficient capital, rather than a mainstream, accessible solution for the entire sector. [16] Despite these barriers, ASHPs are being successfully deployed in high-demand commercial environments like restaurants, leisure centres and hotels, providing both space and water heating for facilities.

Solar Thermal and Photovoltaic (PV) Heating

The story of solar energy in the UK is a tale of two technologies with vastly different market trajectories. While solar energy is gaining popularity, particularly in the form of photovoltaic (PV) panels, the market for solar thermal has seen a sharp contraction. Data reveals that solar thermal installations nearly halved from 615 to 311 in 2023 alone.[17] This contrasts starkly with the booming solar PV market, which saw a post-subsidy record of 189,826 domestic installations in 2023. [17] The UK government's Department for Energy Security and Net Zero (DESNZ) recorded 1.2 GW of new installed solar capacity in 2024, bringing the total to 17.6 GW.[21] In the first six months of 2025 alone, there were a record 123,000 certified solar panel installations, which MCS data shows were the top technology contributing to the overall market boom.[22] There are now over 1.5 million homes with solar panels [20], and total UK solar capacity has reached 19 GW in 2025. [20] Commercial premises contribute a significant 20% of the UK's new solar deployment, representing a major source of on-site clean energy. [16]

The decline of solar thermal can be attributed to a loss of manufacturer/suppliers in the past decade and by comparing its value proposition to that of solar PV. A solar PV system generates electricity, a versatile form of energy that can be used to power a heat pump, an electric immersion heater, or other building services, providing a more comprehensive and flexible decarbonisation solution. It also reduces a building's overall electricity bill, and in some cases, can generate revenue through export schemes.[23] This makes solar thermal, with its specific hot water application, at face value a less attractive investment, despite its advantages over PV when deployed correctly for the

provision of domestic hot water (DHW) supply. Solar thermal systems are more efficient than PV at generating hot water, meaning fewer collectors are required, simplifying installation and addressing roof space demands. The technology is also intrinsically safe, whilst concerns exist relating to poor PV installation. [24]

The application of solar thermal pre-heat is also a well-established means of reducing the energy demands of domestic hot water (DHW) applications, offsetting operational costs and actively cutting carbon. As buildings transition to all-electric water heating to further address decarbonisation, the integration of solar thermal with more costly-to-operate electric DHW applications is even more advantageous, cutting carbon emissions and costs for a fast return on investment. [25]

Non-Domestic Solar Installation Landscape

The data landscape for commercial solar thermal systems is characterised by a significant statistical void. While the Microgeneration Certification Scheme (MCS) confirms that solar thermal is an accredited technology and that an MCS certificate qualifies installers to offer financial incentives [26], there are no publicly available, recent macro-level statistics on its commercial adoption. This absence of dedicated data is a significant finding. It is contrasted by the abundance of data for solar photovoltaic (PV) systems. The lack of specific data for solar thermal suggests a minimal market share, as its adoption is likely highly specialised and is being overshadowed by the more versatile proposition of solar PV. For most commercial entities, the ability to generate electricity from solar PV offers multiple benefits, including powering the building, charging electric vehicles, and generating revenue by exporting excess energy back to the grid via smart tariffs.[27] This broad utility and financial appeal of solar PV make it the dominant choice over solar thermal, which is limited to the generation of hot water.[20]

Role and Applications of Solar Thermal

Despite the absence of macro-level statistics, solar thermal systems are still deployed in specific non-domestic applications where there is a consistent and high demand for hot water. Case studies from industry players highlight the technology's value proposition in settings like leisure/spa pools and commercial facilities.[28] A solar thermal system can provide approximately a third of a building's hot water needs and help reduce carbon dioxide emissions. [26] For businesses with significant water heating costs, such as those in the hospitality, healthcare, or leisure sectors, solar thermal remains a valuable means to lower operational expenses and contribute to sustainability targets, despite the market preference for solar PV.

Emerging and Complementary Technologies

The future of commercial water heating will not be a simple two-way choice between gas and heat pumps. Other technologies will play a crucial, complementary role. Heat networks (district heating) are a vital piece of the puzzle, with over 14,000 networks in the UK serving around 480,000 consumers.[29] The Climate Change Committee (CCC) estimates they could provide 18% of the UK's heat by 2050, up from 2% today, and they are seen as the preferred solution for providing heating and hot water to multi-storey buildings and dense urban areas.[30]

Industrial waste heat recovery (WHR) is another high-potential, niche solution for energy-intensive industries. The economic potential for WHR is estimated at 7-8 TWh/yr, representing 2.4% of overall UK industrial heat energy use and offering significant energy cost and CO^2 savings.[31] These technologies are not alternatives to heat pumps but are sector-specific solutions that address particular challenges. Heat networks, for example, solve the problem of dense urban heat demand

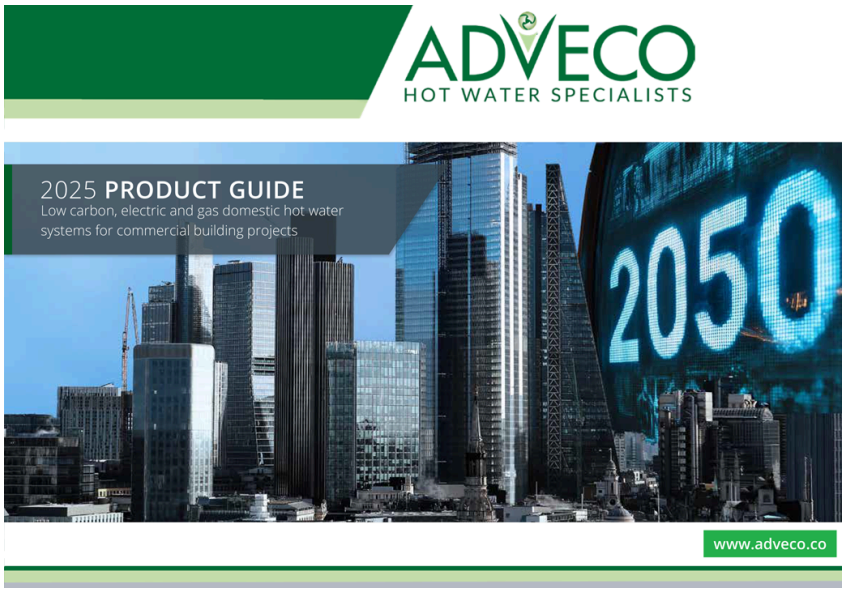
and are often integrated with heat pumps or waste heat. [30] Waste Heat Recovery, similarly, addresses the unique, high-temperature demands of the industrial sector, which is a different problem set from general commercial water heating. Finally, hydrogen is being considered as a potential alternative, especially for harder-to-decarbonise sectors, though a formal decision on its large-scale role in heating is not expected until at least 2026, creating market uncertainty.[32]

Next month, we will conclude this overview, turning our attention to the profound impact of past, current, and planned legislation on the commercial water heating market, the barriers to commercial adoption of sustainable water heating and plausible future scenarios for the commercial water heating in the UK…

Adveco 2025 Product Guide

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

2025 PRODUCT GUIDE



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