RISE | Retrofit information, support & expertise

Air Source Heat Pumps: Supplier Perspective

Case study

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DAIKIN

Contents

Contents 2
Introduction 3
Can you tell us a bit about your experience of working with heat pump technology? 3
What are the most common myths around heat pump technology? 4
What do you think the challenges will be for those wanting to scale up delivery? 5
What are your three top tips for those wanting to install a large number of heat pumps? 6

Introduction

Daikin is a global leader in heat pump manufacturing, offering efficient, sustainable heating solutions for residential and commercial use. Our article is based on an interview with Nick Huston, who is the Future Energy Business Manager at Daikin UK. As part of his role at Daikin, Nick frequently hosts events to spread awareness and conduct training for heat pumps, as well as aiding clients on their wider net zero journeys and plans.

In this document we aim to address some of the common myths surrounding heat pumps, the challenges for scaling up delivery, and some top tips for installing a large number of heat pumps.

This publication aims to share insights, good practices, and lessons learned from relevant retrofit, sustainability and warm homes projects. It is intended for informational purposes only and does not constitute recommendations or endorsements of specific suppliers, products, or services within the sector.

Figure 1: An Air Source Heat Pump, Source: Daikin

Can you tell us a bit about your experience of working with heat pump technology?

Nick Huston has been with Daikin for several years. The company recently celebrated its 100th anniversary, highlighting its long-standing expertise and innovation in the field. In this time, Daikin has developed a range of heat pumps to suit all property types. They believe that this sort of capability is relatively new to their industry, so much so that those previously concerned about heat pumps should look again.

Heat pumps can be seen as well-established now, not a new technology. Nick and his team have worked with a variety of organisations and buildings, including new builds and existing structures. They have also worked for a variety of clients, including local and combined authorities, and across all housing tenure types — social housing, owner-occupied, and private rented. Each sector requires a slightly different approach, but cross-tenure projects often work well, especially when local authorities, the social sector, and the private market collaborate.

The biggest difference between a boiler and a heat pump is that heat pumps are designed around the property type and the occupants. Boilers have often been oversized, leading to inefficiencies. Heat pumps, on the other hand, are sized precisely based on factors like the number of occupants and the type of property, resulting in more efficient and cost-effective use.

In terms of building types, Nick's team have worked with residential properties, including medium and high rise, as well as public and commercial buildings. In these different building types, the technology Daikin uses remains the same. However, Dakin's base technology is the same across these different uses. This means that solutions devised for one sector are just as appropriate in another, such as in high rise housing where sometimes a commercial heat pump solution is more appropriate than one more typically used for residential projects.

In addition to his technical role, Nick also conducts awareness training and sessions on the wider net zero journey and plans. A common barrier they encounter is the perception that heat pumps are not yet established, but Nick believes they have moved past that stage. However, there is still some public perception that needs to be addressed.

What are the most common myths around heat pump technology?

There are several myths surrounding heat pump technology that we frequently encounter:

- One of the most common myths is related to planning constraints. While planning used to be a significant barrier, heat pumps can now often be installed under permitted development, as new planning regulations have eased the process. However, there may still be occasions when planning permission is needed. You should talk to your local planning authority to find out about the specific planning constraints in the area you're working in.
- Another prevalent myth is that air source heat pumps (ASHP) don't work well in cold weather. However, online resources and research shows that ASHPs are most widely adopted in Scandinavian countries, which have much colder weather conditions than we do.
- People often ask if they can get instant hot water with a heat pump. The answer is yes, but it works differently from a combi boiler. Hot water is stored

in a tank and heated throughout the day on a schedule, ensuring it is available on demand.

- Linking this is the concern about where a hot water cylinder would go. Many homes used to have a hot water cylinder, but since the introduction of combi boilers, many of these cupboard spaces have been used for alternative storage. Heat pumps do need to have a hot water cylinder, however there is an option to install a Hybrid heat pump, which uses a boiler and a heat pump together – ensuring that the cheapest most efficient fuel (gas or renewable heat) is used at all times. In these installs, the boiler would do the hot water meaning a cylinder isn't required.
- The biggest challenge with air source heat pumps (ASHP) is that rising electricity prices have reduced their efficiency savings, making them only marginally cheaper to run than gas boilers. Government incentives and flexible tariffs are needed to reduce running costs. These tariffs, such as time-of-use and type-of-use tariffs, can make ASHPs more cost-effective. However, accessing these tariffs can be difficult due to connectivity issues. It must be noted that in other countries where the cost difference between gas and electricity is lower, the uptake of heat pumps is much higher than the UK.
- Another concern for residents is losing the gas cooker. As the government aims to decarbonise and electrify, keeping a gas hob would incur additional costs and require annual servicing. Removing gas altogether can benefit both clients and local authorities by reducing maintenance requirements.
- Noise is another myth. Modern heat pumps are much quieter than older models, often quieter than a gas boiler flue. This improvement has led to their inclusion in permitted development rights.
- Lastly, there's a misconception that heat pump maintenance is more costly or frequent. Unlike gas boilers, there is no legal requirement for annual checks, although it is recommended. Advancing technology such as Modern smart heat pumps can even monitor their own performance, potentially reducing the need for frequent servicing.

What do you think the challenges will be for those wanting to scale up delivery?

Scaling up the delivery of heat pumps presents several challenges. The market needs to install 600,000 heat pumps by 2028, but it isn't fully prepared. While installers and manufacturers are gearing up, there is still a gap in client and market readiness. From Nick's experience, there was an expectation that the number of heat pumps in the bids for new funding streams should have been higher. However, this is not the case, which raises concerns of the lack of confidence that

persists within the mainstream public regarding heat pumps. Raising awareness and making heat pumps mainstream is crucial.

When bidding for large-scale home retrofits, it's important to start with properties that are heat pump ready with minimal work. Tackling the easier properties first can help build momentum. However, some properties, especially those with poor insulation, may not be suitable for heat pumps without significant upgrades.

Replacing and re-siting radiators is another challenge. Old radiators should be changed regardless of the extra cost to ensure the best output from low-temperature heat pumps. This may also involve changing pipework, but it's essential for future-proofing. It must be noted that where a high temperature heat pump is identified for installation, this in many cases, does not require the replacement of existing radiators.

Another challenge stems from the installation of heat pumps. When specifying heating, it's best to work out the heat needs room-by-room rather than for the whole home. This requires properly trained installers who can account for factors like property type and airflow. Many issues arise from poor installation, so it's vital to ensure that landlords request technical information and that installations are done correctly.

Manufacturers and installers are aware of the growth plans and are preparing accordingly. Some regions have stronger capacity than others, so it's important to know local capacity and address any gaps through recruitment and training. Many boiler installers are keen to transition to heat pumps, and recent training alongside clients has facilitated this growth. Working with colleges to train new installers is also key to building capacity.

Overall, the challenges include ensuring market readiness, raising awareness, addressing installation issues, and growing local capacity. By tackling these challenges, we can scale up the delivery of heat pumps effectively.

What are your three top tips for those wanting to install a large number of heat pumps?

1. **Early engagement of residents:** It's crucial to engage residents early in the process so that you can provide them with ample notice and make the experience inclusive rather than passive. Conducting engagement sessions to break down barriers and familiarise them with the new technology beginning with showing them what a heat pump is, how it looks, and how it is used can helps change the mindset from traditional boilers and radiators to heat pumps. Planning this early and raising awareness is key to a smooth transition.

2. **Involve and engage with your wider organisations:** Ensure that not just the asset team but the entire organisation is aware of heat pumps and their benefits. This inclusive approach helps everyone understand the technology and its advantages. By raising awareness within the organisation, you can ensure that residents are well-informed and more receptive to the change.

3. **Embrace technological innovation:** Utilise smart connected heat pumps to monitor performance remotely. This allows for efficient management and quick resolution of any issues. Encourage residents to connect their heat pumps to broadband and Wi-Fi to take advantage of flexible tariffs and remote monitoring. If residents are hesitant, consider installing routers to facilitate connectivity. This approach not only improves efficiency but also future-proofs the system.