RISE | Retrofit information, support & expertise

Heat Pumps: pre-installation steps

Supply chain advice pack:

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Introduction

What the pack covers

About heat pumps

- Why heat pumps are important
- Types of heat pumps
- How they differ to a boiler

Heat pumps for Warm Homes schemes

- Which kinds are eligible in the Warm Homes scheme
- Warm Homes Scheme compliance

Installation considerations

- Pre-install surveys
- Key stages to consider
- Design considerations
- Occupant considerations

About heat pumps

Why heat pumps?

Heat in domestic properties is responsible for around one fifth of UK carbon dioxide emissions[1]. Removing boilers and replacing them with heat pumps is one of the methods in place to help decarbonise heat in UK homes. Not only will this help reduce carbon dioxide emissions, it will also reduce other pollutants such as nitrogen oxide and sulphur dioxide which are emitted when natural gas or oil is combusted in a boiler. The purpose of a heat pump is to completely replace the function of a boiler – it will normally provide 100% of the space heating and hot water requirements.

Types of heat pump

There are different sources of heat for heat pumps: air, water, ground or hybrids. This means they take the heat from the air, ground or water and transfer it.

Air source | Water source | Ground source | Hybrid

[1] Decarbonising home heating (Summary)

Types of heat pumps

Type of heat pumps	About
Air to water	This is the most common type in the UK. Heat is taken from the air and transferred to the 'wet central heating system'. Heating is provided through radiators or underfloor heating and hot water from a cylinder. This approach replaces the boiler as the primary heating system. **Warm Homes:** eligible for Warm Homes.
Air to air	Otherwise known as 'air conditioning' (AC). Can either heat or cool. **Warm Homes:** "Air-to-air heat pumps are currently **not** eligible for the WH:SHF, until all relevant MCS tools and standards (notably MCS 026 and MCS 031) are updated to accommodate air-to-air products and systems" (WH:SHF) guidance. Please see the guidance here for any future changes.
Water source	Requires a body of water nearby so is more location dependent and is therefore less common for residential projects. **Warm Homes:** This type is currently **not** an eligible Warm Homes scheme measure (October 25).
Ground source heat pump	These heat pumps take heat from the ground which typically retains heat to a greater degree than air. You would need access to reasonable outdoor space for this installation. **Warm Homes:** eligible for Warm Homes.
Packaged hybrid	This term is used to describe a combination boiler and heat pump in a single unit, with a common control system. **Warm Homes:** eligibility **depends**, see guidance.
Retrofit hybrid	This term is used to describe the use of a **separate** boiler and ASHP. They must be controlled together in such a way as to prioritise heat from the heat pump, until such time as the outdoor conditions mean that the building heat requirement cannot be met by the ASHP alone. **Warm Homes:** eligibility **depends** and for example if the homes needs a new boiler, only the heat pump part may be funded with Warm Homes, please see guidance for more.

Warm Homes scheme and heat pumps

About the scheme

Warm Homes is a government funded scheme running designed to improve the energy efficient of housing stock. The Warm Homes: Social Housing Fund Wave 3 (WH:SHF), guidance **here**, is designed for social housing and the Warm Homes: Local Grant (WH:LG), guidance **here**, is designed for private sector housing. Both schemes run until 30th September 2028.

Scheme compliance

- Check which heat pumps are eligible – you should always check the live versions of the scheme guidance for the latest and we have summarised this in the table above.
- Both schemes are required to install to PAS 2035:2023 standards and MCS where applicable. "All installers are required to be TrustMark registered (or equivalent) and compliant with corresponding requirements set out on TrustMark's website. All measures must be lodged on the TrustMark Retrofit Portal" (WH:SHF guidance).
- "PAS 2035 requires energy efficiency measures to be installed by an installer who is certified to PAS 2030 for the relevant measure. PAS 2035 also requires low carbon heat measures to be installed by MCS certified installers, with the exception of high heat retention storage heaters that are covered by PAS 2030" (WH:SHF guidance).
- MCS guidance can change, you should view MCS standards for the latest.

Measures, cost caps and more

- Both schemes have cost caps and eligible measures listed in their respective guidance.
- There are incentives and uplifts too e.g. for WH:SHF: "There is a new optional low carbon heating incentive for homes on the gas grid. Up to 10% of homes in an application can gain access to a £20,000 grant fund per home to install low carbon heating measures on the gas grid. Low carbon heating measures eligible for installation using this incentive offer are limited to air source heat pumps, ground source heat pumps and shared ground loops in the first instance, with heat network connections also eligible once permitted under the scheme".
- Also: "Bills must not increase as a net result of all retrofit works to the home, relative to what they would have otherwise been" (DESNZ, WH:SHF).

Summary

- PAS 2035 must be followed in these schemes. PAS 2035 requires low carbon heat measures to be installed by MCS certified installers.
- An MCS certified installation requires use of an MCS certified product. Grant Recipients are responsible for checking the MCS product directory for eligible measures and products.
- An MCS-certified heat pump installation must be lodged on the TrustMark portal as part of PAS2035 compliance.

Installation process and key principles

MCS

MCS Transition period

Please note MCS are currently going through a transition period and therefore you should refer to the website for the latest update.

For Warm Homes projects:

All projects must be compliant with PAS 2035:2023. PAS 2035 also requires low carbon heat measures to be installed by MCS certified3 installers, with the exception of high heat retention storage heaters that are covered by PAS 2030.

Key MCS heat pump standards documents

Current scheme	Redeveloped scheme
The Heat Pump Design Standard MIS 3005-D	The Heat Pump Design Standard MIS 3005-D:2025
Heat Pump Product Standard - MCS 007	Check for specific updates
The Heat Pump Installation Standard MIS 3005-I	The Heat Pump Installation Standard MIS 3005-I:2025.
MCS Planning Standards for permitted development installations of wind turbines and air source heat pumps on domestic premises MCS 020	

Pre-install surveys

This section gives some ideas of items to consider for heat pumps pre-installations. Please note this is not an exhaustive list and please see the MCS latest standards and guidance.

Property assessment

- Heat Loss Calculation
- Insulation & Fabric Check
- Radiator & Distribution System Review

System design and sizing

- Heat Pump Sizing
- Flow Temperature Planning
- Hot Water Demand

Performance estimate (MCS 031 Standard)

- Annual Energy Estimate
- SPF Values
- Customer Quote Stage

Compliance and documentation:

- MCS Product Use: Only MCS-certified products can be used to maintain compliance.
- TrustMark Registration: Installers must lodge the installation on the TrustMark Retrofit Portal.
- PAS 2035 Alignment: Ensures the survey and installation follow retrofit standards for energy efficiency.

Design considerations

When designing your installations, you should take the following high level compatibility steps into account:

- **MCS compliance:** The MCS design and installation process set out in the MCS scheme guidance is comprehensive and must be followed throughout. Following this process will result in compliant installations which have considered all aspects of the design requirements.
- **Noise:** it is likely a potential noise impact assessment on neighbouring properties will be required for the purposes of Building Regulation compliance.
- **DNO checks:** Use the Connect Direct website to inform the DNO of your intention to install a heat pump before setting to work[2].
- **Install space:** sufficient space is required outside the house to locate the heat pump, with free area needed for suitable air flow.
- **Hot water cylinders:** The original hot water cylinder will need to be replaced, to ensure the correct heating coil surface area is present. The use of an undersized coil will lead to heat pump cycling, increased maintenance and call backs. In properties where there is currently no hot water cylinder, consider the use of a hybrid package.
- **Heat pump calculator:** The MCS online tool referred to as the 'Heat Pump Calculator" is designed to ensure that appropriate fabric insulation measures are in place, and that the wet heating system is specified with correctly sized radiators.
- **Check heat meter requirements:** you may need customer heat meters where required by regulations.
- **Multiple measures:** Where occupants are also receiving Solar PV panels or similar, it will be useful to give them additional advice on how to help reduce bills that make the most of these technologies.
- **Maintenance:** if you own thousands of homes it is worth checking if multiple models and types can be serviced by the same person or if bespoke servicing is needed.

[2] https://connect-direct.energynetworks.org/device-databases/search-demand/HP

Key stages to consider

MCS compliant survey and heat loss calculation	Inform DNO of intention to install: Proceed once acknowledged	Upgrade radiators and insulation elements necessary for compliance	MCS compliant installation	Notify installation on MCS registration database and register completion of work on Trustmark

Occupant considerations

- **Tenant inductions or handovers:** and very important: they are a requirement of the PAS 2035 process and crucial to make sure the system is used effectively.
- **Resident trust**: many occupants may be wary of ASHP installations after reading negative stories in the press**.** Early engagement with them to help address their concerns will be helpful. Please see the 'Useful Links' for material that may help with your engagement.
- **Different operation:** wet heating system design is crucial for efficient performance and occupant satisfaction. Many of the causes for dissatisfaction with heat pump installations can be traced back to poor heating distribution design, not the heat pump itself.
- **Costs:** to ensure running costs are as low as possible, it's important that the installation is set up with the correct weather compensation (referred to as the 'heating curve') in the heat pump control settings. This may require installers to go back to the property after the first heating season to adjust the settings. Installers frequently err on the side of caution and set the curve 'high', but this may result in higher running costs, and occupant dissatisfaction.

Resources

- The MCS tools and documents library[3]
- Air source heat pump noise emissions, planning guidance and regulations[4]
- NESTA report on consumer satisfaction with heat pumps[5]

Podcast: All RISE podcasts are available **here**.

PAS podcast: "Heat Pump Lessons from Retrofit with Kensa" available **here**.

Masterclass: All RISE masterclasses are available **here**.

Heat pump masterclass: "Heat pumps in retrofit projects with Sureserve" **here**.

Advice pack: All RISE advice packs available **here**.

Heat pump advice pack: "Heat Pump Installation Considerations" available **here**.

[3] https://mcscertified.com/standards-tools-library/
[4] https://www.gov.uk/government/publications/air-source-heat-pump-noise-emissions-planning-guidance-and-regulations
[5] https://www.nesta.org.uk/documents/2782/Heat_pump_user_survey_report_May_2023.docx.pdf