RISE | Retrofit information, support & expertise

# Air Source Heat Pump: post installation

## Supply chain advice pack

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www.riseretrofit.org.uk

# Introduction

## What do I need to consider post-installation?

| 1) MCS registration | 2) Tenant Handover | 3) Controlling the heat pump | 4) Maintenance | 5) Warranties |
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## 1)MCS registration

**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.

- Installations must be registered within 10 working days
- Registration paperwork may include:
  - Evidence of compliance with the MCS Heat Pump Installation Standard
  - Evidence of compliance with noise regulations
  - Evidence of compliance with a tenant handover
  - Evidence of heat performance calculations
  - Evidence of appropriate system sizing
  - A servicing schedule.

## 2)Tenant considerations

It's important that occupants are supported throughout the entire installation process. You will need to ensure the heat pump handover process includes instructing occupants on the following topics:

- Basic principles of controlling the heat pump
- Heating the home, not the room
- Heating for longer periods does not mean higher running costs
- Understanding that low flow temperatures mean that radiators are not supposed to be hot
- Setting on the heat pump that might cause problems if interfered with
- Legionella cycles
- The difference between problems with the heat pump vs heating controls
- Keeping the outdoor unit clear of obstructions.

## Problems you may encounter post-installation

The most common causes for negative feedback on heat pump installations stem from poor communication and handover once the installation is completed. These problems can be mitigated through good handover processes. The root issues are:

- Occupants failing to have a basic understanding of how a heat pump works
- Occupants failing to understand how heat pumps are successfully controlled to avoid high running costs.

These issues result in loss of confidence in the technology, high heating bills for the occupant, higher maintenance requirements and frustration.

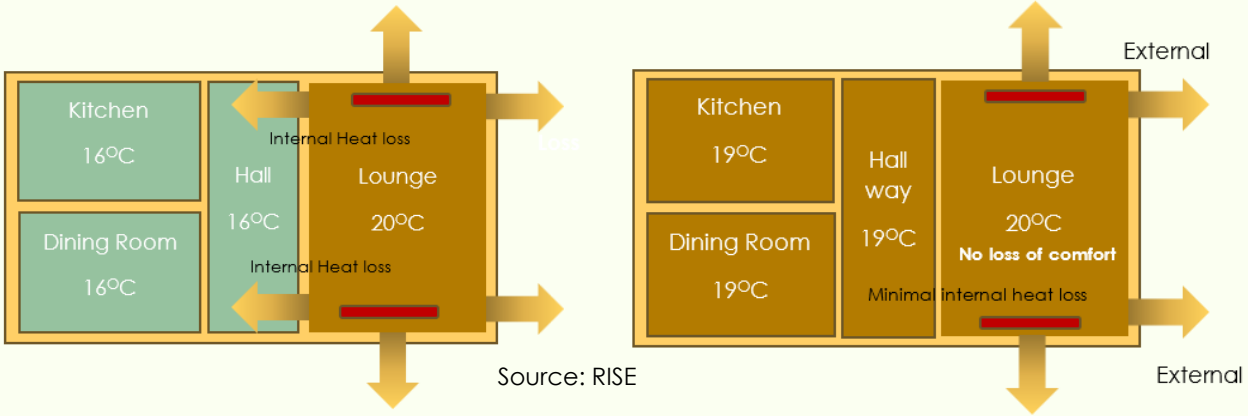
## Heat the house, not the room

All occupied homes require proper ventilation and warmth to help drive out moisture from both the air and building fabric. For the temperature we heat homes to, every degree below 18°C leads to progressively worse health outcomes[1].

When occupants try to only heat single rooms rather than the whole house, this is likely to lead to increased chance of damp and mould, and poor health outcomes.

Turning most of the radiators off throughout the house and only leaving one or two open will also cause problems for two reasons.

Firstly, this is because the rooms leak out heat too quickly for the heat pump to catch up with the relatively low flow temperatures used in the radiators. The result is loss of thermal comfort as the temperatures outside get progressively colder throughout the year.



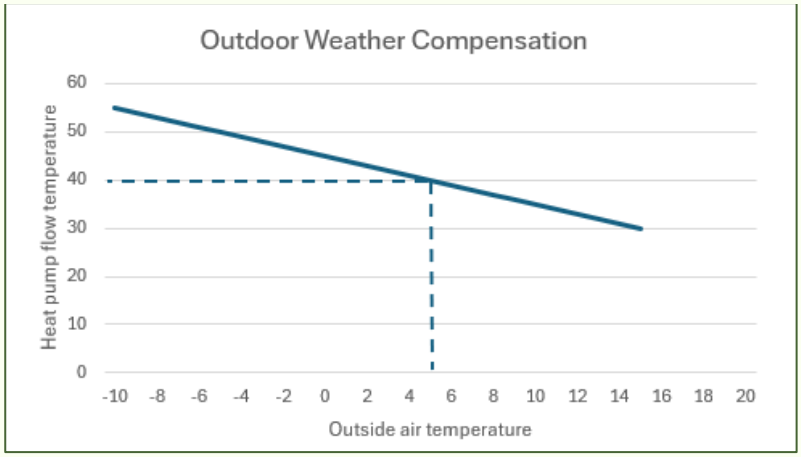

Source: RISE

[1] https://phwwhocc.co.uk/wp-content/uploads/2024/11/Cold-Homes-in-Wales-is-the-satisfactory-heating-regime-appropriate-for-health-and-well-being.pdf

The second reason is that only heating 2 rooms can lead to excessive cycling in the heating equipment. This problem is not unique to heat pumps but is particularly problematic for them. It will lead to both a loss of thermal comfort and excessive strain on the heat pump compressor and inverter, which could be avoided through correct heating of the building. Compressor failure is very expensive to deal with and may "write-off" the heat pump.

# 3) Controlling the Heat pump

Heat pumps are controlled using **outdoor weather compensation** (OWC). This is a very simple concept that is widely used in commercial heating plant, but relatively unused in the domestic market. Many modern boilers can also use OWC but are often not set up to do so.




Source: RISE -Example of a heating curve used for outdoor weather compensation

OWC uses a heating 'curve' to modify the heat pump flow temperatures. It changes the flow temperature to the radiators based on the outside air temperature.

In this example, when it is 5 degrees outside, the heat pump will supply water to the radiators at 40 degrees. The lower the flow temperature, the cheaper the heat pump is to operate, so it's important that the OWC is set as low as possible. A well-set heating curve will lead to lower heating bills, whereas a poorly set one might lead to higher costs than the original boiler.

Installation work frequently happens out of the heating season. This means the installers are unlikely to speak to the customer while the heat pump is in full use.

For this reason, you should always make sure the retrofit co-ordinator has considered educating the occupants about this issue. Best practice includes:

- Instruction given to the occupant at time of installation
- A follow up with residents before the heating season starts

- Well written handover documentation in plain language
- The maintenance contractor being instructed to speak to the occupants to check on thermal comfort and running costs at the time of servicing checks.

Ultimately the occupants may simply turn off heat pumps they do not understand how they work, or they fear high running costs and use room heaters instead.

# 4) Maintenance

- **Your portfolio:** If you are installing heat pumps in multiple homes you should discuss servicing in the early stages with your asset maintenance teams. Also note that if you have multiple models to check whether your servicing company can cover multiple models.
- **Warranty compliance:** normally the heat pump manufacturer's own guidance should be followed to ensure warranty compliance. You should check the warranty policy.
- **Who will service them:** You will also need to consider regular maintenance checks and decide whether you want to deal with this yourself or contract out the maintenance to a third party. Heat pumps are usually simple to maintain, and most servicing tasks can be completed by a competent plumber. An annual check of the heat pump is unlikely to take more than a couple of hours. The refrigerant circuit runs under high pressure using special gases and requires an 'F-Gas' qualified operative to do remedial works if there are ever leaks or failed components. However, most heat pumps will never need an F-Gas engineer to visit site.
- **What needs to be serviced?** Annual servicing tasks recommended by the Heat Pump Association[2] include:

  **External Inspection**
  - Verify correct heat pump installation and secure mounting.
  - Ensure proper drainage to prevent hazards.
  - Inspect electrical connections for weather-tightness.

  **System Checks**
  - Confirm system flushing and cleaning has been carried out.
  - Check for appropriate thermal fluid and biocide levels to ensure frost protection.

  **Controls and Settings**
  - Assess control systems for proper configuration of the outdoor weather compensation

[2] Technical Resources - Heat Pumps

**Central Heating and Domestic Hot Water**

- Check that the heat emitters have been installed to the correct design parameters based on the installers heat loss calculations
- Check for suitable legionella protection measures.

# Useful links

**Advice pack: heat pumps:** pre-installation steps available here.

**Podcast** "Heat Pump Lessons from Retrofit with Kensa" here.

**Masterclass** "Heat pumps in retrofit projects with Sureserve" available here.

**Podcasts** listen to the RISE podcasts here available here.

**Guidance MCS** available here.

**Guidance:** air source heat pump noise emissions planning guidance here.