

Fact Sheet 5: Air Source Heat Pumps



Sanyo SAP-KRV93EHN heat pump outdoor unit

What are they?

An air source heat pump is a bit larger than a domestic washing machine. They are located on the outside of buildings connected through the wall to an internal unit.

What do they do?

They provide hot water or hot air. The hot water can be used for domestic hot water (showers etc), under-floor heating or over-sized radiators, requiring a lot less energy than a conventional boiler. Warm air can be used to directly heat a room. While a conventional immersion heater will supply one unit of heat for every one unit of electricity, a heat pump will supply 2-3 units of heat for one unit of electricity.

How do they work?

They work in the same way as a refrigerator, but on a larger scale. A refrigerator moves heat from its inside to its radiator at the back. In the same way, an air source heat pump moves heat from the air to a hot water supply.

The air source heat pump contains a large fan and a heat exchanger. The fan sucks in air over the heat exchanger, and the heat in the air passes into the heat exchanger. Heat can be extracted from the air even when it is close to freezing.

Although the air contains very little heat, a large amount is blown over the heat exchanger.

Using the same mechanism as a refrigerator, the air source heat pump turns a large amount of slightly hot air into a small amount of very hot liquid. Air source heat pumps were not included in the Renewable Heat Incentive (RHI) at its launch, but may be included at a future date. Please check the Department of Energy and Climate Change's (DECC's) website for the current status.

Where do they go?

Air source heat pumps can be placed outside, next to the building that it is supplying with heat. Air is sucked through it, so it must not be covered in a way that blocks the fan. However, it can be hidden away to some extent.

What issues need to be considered?

An air source heat pump is easier and cheaper to install than a ground source heat pump because it does not use buried pipes. However, because the air does not store heat as long as the ground, an air source heat pump will be less efficient in the winter when the air temperature is colder.

Noise can also be an issue as the external fan units can generate a considerable level of noise; this can be exacerbated if the pump is not sited correctly e.g. where noise echoes or can vibrate against a wall or fitted close to a bedroom window. That said, a properly installed and maintained heat pump should not cause any undue noise nuisance and a reputable installer should ensure the heat pump is sited appropriately.

What are the planning requirements?

i. Air source heat pumps in homes

Most householders can carry out small extensions or additions to their homes without the need for planning permission. This is known as '**permitted development**'.

Permitted development rights allow for air source heat pumps to be installed on detached houses or blocks of flats without the need for planning permission, providing certain conditions are met.

These conditions have been set to ensure that any negative impacts such as visual impact and noise are kept to a minimum.

Air source heat pumps are classed as permitted development if they meet the following limits:

- The heat pump complies with the Microgeneration Certification Scheme (MCS) Planning Standards (or equivalent).
- No other air source heat pump or a wind turbine has been installed on the building (additional installations will require planning permission).
- The outdoor unit should be no bigger than 0.6 cubic metres and at least 1 metre away from the site boundary.
- Air source heat pumps installed on a flat roof should be within 1 metre of the roof edge. Air source heat pumps installed on a pitched roof would require planning permission.

- In conservation areas and World Heritage Sites, heat pumps should be installed at ground level and should not be fitted on a wall or roof which fronts a highway.
- If your home is a listed building or on a site of a designed scheduled monument, planning permission, and in some cases listed building consent, may be required.

ii. Air source heat pumps in other buildings

Permitted development rights for small scale renewables do not extend to non-domestic buildings, and planning permission may be required before air source heat pumps can be installed on non-domestic buildings such as offices, schools, industrial premises and agricultural buildings.

It is always recommended that applicants speak to the Planning Department as soon as possible to identify the planning requirements, especially if the building is listed, or within a conservation area.

To help the Planning Department make an informed judgement, it is useful to submit information on the technology with the application e.g. the size and external appearance of the panels and provide plans showing where the equipment will be installed.

More info

The Department of Energy and Climate Change's (DECC's) page outlining information on air source heat pumps, with links to pages by the Energy Savings Trust:

http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/explained/microgen/ashps/ashps.aspx

The companion guide to planning policy statement 22 provides more information on the planning and development of renewable energy schemes across England:

<http://www.communities.gov.uk/publications/planningandbuilding/planningrenewable>

Please Note: National planning guidance is currently under review and the companion guide to planning policy statement 22 is referred to for information only.