Guidance note
Air source heat pumps

ChurchCare

16,000 buildings. One resource

Air source heat pumps are an efficient way of using electricity to heat your church, by capturing and boosting heat drawn from the air.

Benefits

- The energy resource is solar energy stored in the surface of the ground, water and air, which is plentiful
- Cuts carbon footprint: renewable heat saves carbon
- Can be retrofitted
- Lower fuel bills: air source heat pumps run on electricity, so there's no need to pay for gas, oil or solid fuels and they can be useful in locations not connected to a gas supply
- Cheaper than other heat pumps (but less efficient)
- Need little maintenance - they're called 'fit and forget' technology

How does it work?

An air source heat pump looks rather like an air conditioning unit positioned on or near the outer wall of a building. It uses a fan to extract ambient heat from the outside air. It works on the same principle as a domestic fridge, but in reverse. Heat from the air is absorbed at low temperature into a fluid. This fluid then passes through a compressor where its temperature is increased, and transfers its higher temperature heat to the heating of the church.

Types of ASHP and installation:

- Air-to-water system uses heat to warm water. These heat water to a lower temperature than a standard boiler system, so they are suitable for under floor heating.
- Air-to-air system which produces warm air, which is circulated by fans.

ASHPs are less efficient than ground or water source heat pumps, but they have the benefit of being easy to install requiring minimal impact on the building.

Are they noisy?

There will be some noise; manufacturers quote around 65 decibels (db) for the noise

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level at 1 metre from their unit. By comparison, normal conversation may be at a noise level of 50db, a busy office about 60db, and a busy street about 70db. The external part of an ASHP is basically the same as an air conditioning unit, but they do vary a lot - so don't judge all ASHPs by the noisiest air conditioner.

Cost

Installing a typical system costs around £6,000 to £10,000. Running costs will vary depending on a number of factors - including the size of your space, and how well insulated it is, and what temperature you are aiming to achieve.

Savings

How much you can save will depend on what system you use now, as well as what you are replacing it with.

Your savings will be affected by:

- Your heat distribution system - underfloor heating can be more efficient than radiators because the water doesn't need to be so hot. If underfloor heating isn't possible, use the largest radiators you can.
- Your fuel costs - you will still have to pay fuel bills with a heat pump because it is powered by electricity, but you will save on the fuel you are replacing. If the fuel you are replacing is expensive you are more likely to make a saving.
- Your old heating system -If your old heating system was inefficient, you are more likely to see lower running costs with a new heat pump.
- Using the controls - learn how to control the system so you can get the most out of it. You will probably need to set the heating to come on for longer hours, but you might be able to set the thermostat lower and still feel comfortable.

Earnings

The Department of Energy and Climate Change (DECC) have not included air source heat pumps in the government's Renewable Heat Incentive (RHI) scheme, but may consider inclusion in a few years time.

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