Advisors Toolkit
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Air Source Heat Pumps (ASHP)

Air source heat pumps (ASHP) absorb heat from the outside to heat buildings. There are two types of air source heating systems. Air-to-air systems provide warm air, which is circulated to heat a home. Air-to-water systems heat water to provide heating to a home through radiators or an underfloor system. ASHP can extract some useful heat from air at temperatures as low as minus 15°C.

ASHPs need electricity to run, but they should use less electrical energy than the heat they produce. Typically, for every unit of electricity used to power the pump, 3 to 4 units of heat are produced.

ASHPs extract heat from the outside air, and use it to heat your home and hot water. An air source heat pump has three main parts: an evaporator coil which absorbs heat from the outside air; a compressor which drives the refrigerant through the heat pump, compressing it to increase its temperature and; a heat exchanger which transfers the resulting heat to air (for warm air convection systems) or water (for radiators, underfloor heating or pre-heating water in a storage tank).

ASHPs differ in size and complexity, so cost and payback are difficult to specify. Payback is also influenced by: efficiency of the system; the type of heat distribution system being installed (underfloor heating tends to be more effective); the type of system being replaced by ASHP; energy efficiency of the home; whether ASHP is also being used for heating the domestic hot water supply.

In addition to planning requirements, consideration needs to be given to the installation site (space and air flow).

The Energy Saving Trust has completed field trials of ground and air source heat pumps, in order to get a better idea of how they perform and the savings they achieve in real life environments. Read the final report 'Getting warmer: a field trial of heat pumps' on their website at www.energysavingtrust.org.uk

ASHPs are not permitted within a World Heritage Site or within the curtilage of a listed building. They are not permitted within Conservation Areas unless situated at ground floor level and on the rear elevation of a building.

ASHP are permitted development for a single installation as long as no other building or area designation is in effect.

Some ASHPs qualify for the domestic Renewable Heat Incentive (RHI) – see Factsheet 4.e