

Heat Pumps

How they work

Heat pumps feature a refrigerant circuit that compresses gas to create heat. The refrigerant is a liquid that absorbs heat (from the air or from the ground) and boils to become a gas. This gas is then compressed to create heat which is transferred for use within the home.

Do heat pumps work in the cold weather?

Yes, most heat pumps can continue to work in conditions of -10°C and certain heat pumps can work in temperatures as low as -20°C.

The refrigerant liquid is capable of absorbing heat in very low temperatures which means a heat pump can continue to provide warmth to a home even where the temperature outside has dropped, which makes heat pumps an effective low carbon option. Only when the heat pump's minimum working temperature is reached will the heat pump stop working.

Air source heat pumps may have reduced power in the cold. This is because as the heat is extracted from the air, the condensation on the evaporator may freeze. When this happens the efficiency of air source heat pumps may be lower as the equipment will enter a reverse cycle (defrost mode) to melt any condensation that has frozen onto the evaporator.

Stroud District Council Heat Pumps

SDC have 42 ground source and 493 air source heat pumps. The units have been installed according to the manufacture's specification, which suggests all of our units can work in temperatures up to -20°C.

These pumps have been procured and installed over a number of years and as such reflect changes in technology over time. Nevertheless, the specification of all the pumps servicing our properties meet effective operating standards and are effective in temperatures of at least -12°C.

Heat pump care

Heat pumps are most efficient when they are left running, regardless of the weather. Temperature management can be controlled within the property. Turning a heat pump on only in cold weather can cause the device to malfunction.

The purpose of the defrost mode on a heat pump is to prevent ice from accumulating inside the system, which could ultimately cause it to break down.

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There are steps that end user can take to protect their heat pumps against the cold:

- Ensuring the heat pump is regularly maintained and serviced annually
- Conceal any exposed pipework.
- Heat pumps need space around them so that the air can move through the heat pump and dissipate, so keeping space clear is important
- Raise any issues with heat pump as soon as noticed
- Keep heat pump switched on to allow defrost mode to activate.

The better protected a heat pump is from the elements, the less of an impact cold weather will have on the unit.

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