Complete Water Solutions

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Practical things to consider before installing an open loop ground source heat pump system

General Considerations

- Open loop systems are not suitable for all locations; the underlying aquifer needs to be capable of supporting the heat pump and heat load of the system. As with all boreholes you are only able to abstract 20m³ per day without an abstraction licence from The Environment Agency.
- Open loop systems are generally more expensive than closed loop systems due to the additional pumping equipment and design involved, however they provide all of your water and heating requirements.
- As with all boreholes the depth of the underlying water and its quality is never guaranteed. The quality of the water can affect the service life of some parts of the system.
- Unlike gas and oil boilers, heat pumps deliver heat at lower temperatures over much longer periods, because of this they are not ideally suited to everyone. If you are hoping to simply replace an oil or gas boiler and fit a ground source heat pump onto the existing distribution system, ground source heating may not be for you.
- Distribution system - Conventional radiators are designed to work at a high temperature over a small surface area. For a heat pump to work effectively it will produce lower temperature water and this requires a much larger surface area to distribute heat to the property. The ideal distribution system for a ground source heat pump is a large bore under floor heating system; this will cope with the large volume of water at lower temperature and if installed correctly will provide a constant background temperature.
- Insulation levels of the property - If your property is poorly insulated the lower temperatures may not be enough to cover the heat loss of the buildings, so a heat pump may not be the right choice although it is possible to use a secondary heating source to raise the temperature in some rooms, such as the living room or throughout your home. This could be done by using a conventional central heating system or individual room heaters or log burners etc. Ground source heat pumps can also be used in conjunction with other forms of renewable energy such as solar panels to provide hot water.
- Cost - Installing a typical heat pump system costs around £15,000 to £19,000. Running costs will depend on a number of factors - including the size of your home and how well insulated it is.

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Practical considerations with reference to the installation

- The borehole pump will require an un-protected electric supply with adequate dry frost proofed space for the controls.
- The installation and future maintenance of your heat pump(s) will be much simplified if the heat pump could be housed within a plant room, preferably with a concrete floor. Heat pumps are generally weighty items therefore floor mounting is preferred.
- A gap of approximately 450mm should be left to the rear of the heat pump(s) to allow for pipe work etc.
- We recommend that the electrical supply be via a local sub-board incorporating an appropriate D-type MCB.
- Unlike "combi" boilers, heat pumps do not generate instantaneous hot water. Hence, in order to provide hot water for domestic use (DHW), a heat pump must be used in conjunction with a hot water cylinder. Please ensure that space is available for a typical 300litre cylinder.
- When specifying a heat pump system to work with a distribution system (not supplied by us), for example under floor heating (UFH), "full control" UFH or a traditional distribution system, the inclusion of a buffer vessel is highly recommended and although typically not as large as DHW cylinders, space to accommodate such an item must be considered.