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Main components of a closed loop ground source heat pump system

Along with the heat pump and ground loop a heat pump system consists of some other important components, a brief outline of them is given below:

Ground Loop
This collects solar energy stored in the ground or body of water into which it is installed. A water/antifreeze mix is circulated through the ground loop (whichever form this takes), transferring heat from the ground or body of water to the heat pump and hence your home or building.

Flushing chamber
Usually located outside (ground loops can hold typically 1000 - 2000 litres of heat exchange fluid; handling such a quantity is easier with a little elbow room) allows charging and purging of ground loop.

Heat Pump
The heart of the system that converts bulk low-grade heat from ground loop to sufficiently high-grade heat for heating purposes using similar technology to that of a domestic refrigerator or freezer.

Buffer Vessel
Optional but strongly recommended system element. Heat pumps do not like frequent starts and stops (short cycling). A suitably sized buffer vessel gives the heat pump(s) a load to drive regardless of demand from heating zones. This allows the heat pump to work at its own pace and prevents problems arising from short cycling, such as 'lock-out' due to high return water temperatures.

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Domestic Hot Water Cylinder (if required)
The type of hot water cylinder required to work most efficiently with the proposed heat source would be an indirect type cylinder featuring additional heat exchange coils (themselves being optimised for surface area and flow rate), and be extremely well insulated.