

One of the unique benefits of ground source heat pumps is their minimal maintenance requirements and long life expectancy. However, as with all heating systems, it is good practice for the heating distribution system, including energy collectors, to be proactively checked and maintained to ensure optimum performance when colder weather is on the horizon.

Temperatures below ground remain relatively constant all year round, so a sudden drop in air temperature during winter will not affect the performance of a ground source heat pump, nor does the impact of exposure to the elements affect operation, as it would an air source heat pump.

Kensa Heat Pumps' award-winning ground source heat pumps are designed to be simple to install and easy to maintain. This approach was at the forefront of the design process for Kensa's brand new Evo Series.



Released in spring 2017 to supplant its award-winning Compact range, the Evo features custom built software which pre-empts system irregularities which may previously have resulted in a fault if left unchecked. This will ultimately reduce costs and call outs and enable better diagnostics, aided by Kensa's technical support.

However, as with all heating systems, it is still advisable that the whole heating distribution system is checked at least on an annual basis.

Kensa recommends the following basic checks are made on the heating distribution system:

- Check the inhibitor levels and ensure no corrosion or degradation has occurred.
- Make sure that all pump valves and actuators on the system are functioning correctly.
- Ensure all room stats and programmers are operating correctly and are programmed correctly.
- If any components require a battery to function, check

that the battery has charge.

- If the system has filters or a MagnaClean, check that this is cleaned and/or serviced.
- Check the pressure of the system; Kensa recommends that it is above 2 bar.
- Perform a gas charge pressure check on the expansion vessel.

The following quick and easy checks on the ground array should also be carried out:-

Slinky pipe and sealed boreholes

- Samples of thermal transfer fluid should be taken and the concentration of the antifreeze solution measured using a refractometer.

After a number of years the concentration of antifreeze solution within the ground arrays can



drop due to possible top-ups of fresh water to maintain the ground array pressure. Antifreeze solution provided by Kensa contains an anti-bacterial agent and an inhibitor to avoid bacterial growth and corrosion. Maintaining the correct concentration of this antifreeze solution is important as it will stop the system from freezing and also prolong the lifespan of the circulation pump. The bacterial agent will ensure no bacterial growth occurs, thus further increasing the lifespan of the antifreeze.

- The manifold should be thoroughly inspected, checking that any insulation is still in good condition and the components are still fit for purpose.

Ground array manifolds on the ground collector can suffer from condensation due to the low temperatures of the thermal transfer fluid, which if not properly controlled can cause damage.

- After a period of time any disturbed ground will settle, so manifolds should be checked for strain on pipework connections caused by ground settlement. It can take up to 12 months for any disturbed ground to fully settle and if any pipework is under strain this must be remedied.
- The pressure of the thermal transfer fluid within the ground array should be checked and increased if required. Kensa recommends that it is above 2 bar.

Pond Mats

- It is advised that pond mats are inspected, cleaned and maintained regularly. After a period of time sediment, mud and leaves could build up around and under the pond mat collectors causing a potential loss of performance and reduced ability to harvest heat from the water.

Open Loop

- Check the manufacturer's guidelines on maintenance for external heat exchangers. Manufacturers of plate heat exchangers can recommend that the plate gaskets are replaced every two years.
- Any external filters or treatment systems fitted to an open loop system should also be checked and maintained in line with the manufacturer's guidelines.
- Open loop heat exchangers can suffer from condensation damage due to running with liquid at lower than ambient temperatures, which if not properly controlled can cause damage. Any heat exchanger should be inspected checking that any lagging is still in good condition and any components are still fit for purpose. If corrosion has started, these areas can be treated to preserve their longevity.
- The open loop pump and pump control may also need to be maintained and it is advisable to check with the manufacturer or suppliers for their recommendations.
- Particularly for any surface water sources, check inlets and outlets are free from vegetation and also from any flotsam and jetsam.



An evolution in heat pump maintenance

Kensa's Evo Series of ground source heat pumps makes life easier by automatically performing some of the standard system maintenance checks listed above. Kensa has developed their own control board which is the brain of the new Evo heat pump. The custom built software provides live status updates and innovative diagnostics which permits the control board to pre-empt system irregularities using warning safety levels.

Other new features include a water pump exercise program that is activated when the heat pump is dormant for a prolonged period, eliminating the need for user interaction to ensure that the water pump still spins and is operational. The Evo's new pipework arrangement has alleviated the need for bleeding the heat pump before the heating season, as the heat pump has no internal high points for air pockets to collect.

The Evo will also warn of a lack of flow which can indicate to the homeowner that the system is losing flow possibly due to blocked filters. A warning can be set on the unit allowing planned maintenance to occur before the unit goes to alarm and shuts down to protect itself or any significant damage occurs.