**Green Ixworth**

**Heat Pumps**

**What is a heat pump?**

An air source pump is a way to heat your home without using fossil fuels. It replaces gas and oil boilers. You need to run them for longer periods to heat your home to a comfortable temperature but save money on your energy bills.

Heat pumps can save you more on your heating bills if you're replacing an expensive system such as electric storage heaters, oil, LPG (liquefied petroleum gas) or coal, rather than gas. If your current gas boiler needs replacing install an ASHP, they are now similar in price. But remember, a well-insulated home is essential – otherwise the heat the pump is generating escapes more easily.

Ground source heat pumps work in the same way as ASHP except the heat source is from the soil. Although potentially even more efficient than a ASHP the area required for underground pipe matrix may be large and deep.

**How does an air source heat pump work?**

An air source heat pump takes heat from the air and boosts it to a higher temperature, compressing a refrigerant like a fridge in reverse. It then transfers the heat to the heating system in your home to heat water or air usually simply replacing your existing boiler

Using electricity, the pump compresses gas to increase its temperature, like a bicycle pump. It then expands to release its stored heat, which is sent to your radiators or underfloor heating. The system is also capable of providing your hot water through a replacement cylinder.

Air source heat pumps work even if the temperature is well below zero. They look similar to air-conditioning units, their size depends on how much heat they'll need to generate for your home - the more heat, the bigger the heat pump.

**How does it heat the house?**

There are two main types of air source heat pumps: air-to-water and air-to-air. They are compatible with different types of heating systems

**Air-to-water heat pumps**

Air-to-water heat pumps take heat from the outside air and feed it into your wet central heating system. Most retrofit ASHPs are this type.

As they produce water at temperatures lower than a boiler, a greater area of radiators may be required achieved by some radiators being replaced, usually by increasing the number of panels. Not so with high temperature units but they are slightly less efficient. Retrofitting underfloor heating is a more expensive method.

**Air-to-air heat pumps**

Air-to-air heat pumps take heat from the outside air and feed it into your home through fans. These systems cannot produce hot water so you'll need a separate immersion heater or other water heating system.

In the summer, an air-to-air heat pump can operate in reverse. You can use it like an air-conditioning unit to provide cool air for your home. You need a warm/cold air circulation system to move the air around your home.

**Air source heat pump installation**

Air source heat pumps are usually positioned outdoors at the side or back of a property. They need sufficient space around them for air to circulate, a minimum of 30cm. and at least 1m from the property’s boundary.

Inside, you'll usually have a unit containing control system, valves, pumps and hot water usually replacing the old oil or gas boiler.

ASHPs are less disruptive to install than ground source heat pumps, as they do not require any digging up your garden.

You won't normally need planning permission for an air source heat pump. If you live in a listed building or conservation area, you may need the consent of your local authority. A registered installer should meet the building regulations requirements .

Speak to your home insurance provider too to check if your policy will cover the changes to your heating system.

If you're getting an air source heat pump it's important to make sure that your home is well-insulated to retain the heat.

Your installer should tell you how to use the controls for your heat pump to help you use it most effectively. When your system is completed, you should be given a Commissioning Certificate from the installer. You should also get an MCS installation certificate once the system has been registered (the installer must do this within 10 days). You'll need this to qualify for most funding schemes.

**Air source heat pump advantages and disadvantages**

Air source heat pumps require little maintenance and can provide heating and hot water. Here are some of the key advantages and disadvantages:

**Pros**

Energy efficient and low carbon - air source heat pumps generate less CO2 than conventional heating systems

Less disruptive than installing a ground source heat pump, if you're retrofitting

You could save money on heating compared with some older systems.

**Cons**

You'll need enough space outside for the external condenser unit which should not be very noisy but does need to be more than 1m from your boundaries.

Electricity is needed to drive the pump so they are zero-carbon if you have a zero-carbon electricity tariff.

**Are air source heat pumps efficient?**

An air source heat pump system can help to eliminate your heating carbon footprint as it uses a renewable, natural source of heat and sustainable electricity. The pump uses less electrical energy than the heat it produces, a ratio of one to 3 or 4. This makes them an energy-efficient and sustainable way to warm your home.

You should also have your heat pump serviced every two to three years. Check that any grills are free of leaves and debris on a regular basis and follow any other maintenance checks advised by your installer.

**How much?**

Prices are coming down quickly and with the Government £5,000 grant available which is installer arranged. They are available fully installed from about £3-4,000 for a small house (Octopus). The current/past average cost including the government subsidy is £7-8,000, £6-7,000 with space heating only.

For more information www.greenixworth.org.uk