ELECTRIFICATION OF HEAT
DEMONSTRATION PROJECT

Heat pump talk

Effective conversations between customers and installers throughout the heat pump installation journey

Department for Business, Energy & Industrial Strategy

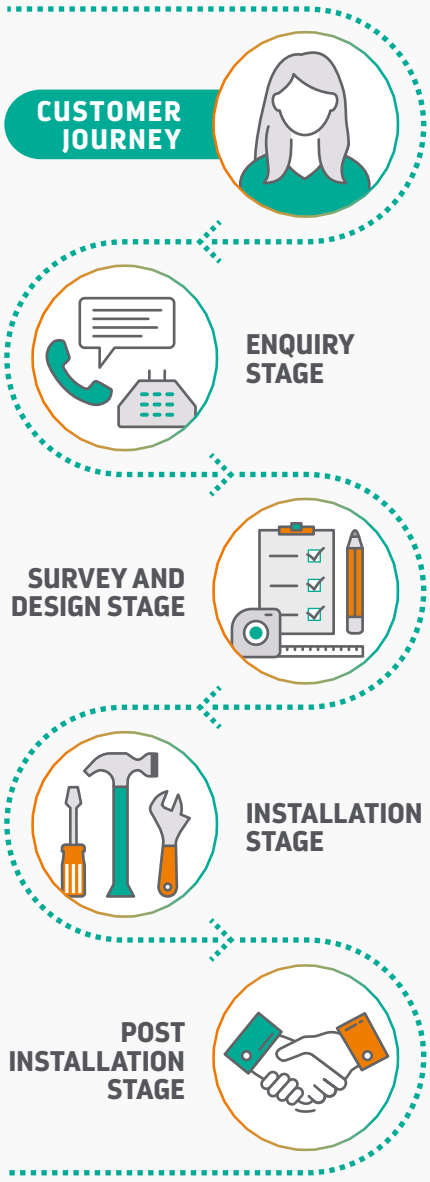
DELTA-EE

CATAPULT Energy Systems

Oxford Computer Consultants

INTRODUCTION

The Electrification of Heat (EoH) demonstration project is funded by the Department for Business, Energy and Industrial Strategy (BEIS) and seeks to better understand the feasibility of a large-scale rollout of heat pumps in homes across the UK. It aims to demonstrate that heat pumps can be installed in a wide variety of homes and deliver high customer satisfaction across a range of customer groups.



In the course of the Electrification of Heat project we spoke to many participants and installers about their experience of installing heat pumps. From this we learned how customers and installers can interact most effectively at different stages of the customer journey.

The following example conversation gives customers ideas of what questions to ask their installer. It also offers installers guidance on what to convey to customers to help them make an informed decision.

People live in different homes, use heating differently, and have different motivations and understanding, so while this example conversation provides some common questions, it is not exhaustive.

A total of 742 heat pump systems were installed in the project across a broad spectrum of homes from Victorian mid-terraces to pre-WWIIs semis and a 1960s block of flats.

Interview case studies were conducted with several of the participants, and three participants were asked specifically about communicating effectively with installers based on their experience in the project.

The project appointed three Delivery Contractors to install heat pumps in three regions across Great Britain:

- **South East of Scotland** – lead delivery contractor **Warmworks** working with Energy Saving Trust and Changeworks.
- **Newcastle** – lead delivery contractor **E.ON** working with Newcastle City Council and Your Homes Newcastle.
- **South East of England** – lead delivery contractor **Ovo Energy** working with Kaluza, RetrofitWorks, Parity Projects and SunAmp.

Over 20 heat pump installation specialists were subcontracted to carry out the heat pump installations. Three of these specialists were interviewed about how to have effective conversations with consumers.

ENQUIRY STAGE

At the enquiry stage, it is important for customers to find out what living with a heat pump would be like and what the installation process typically involves.

Installers need to provide enough information for customers to make an informed decision, but should avoid being overly technical.

CUSTOMER

Hi. I am interested in changing my old combi gas boiler to a heat pump. May I ask you some questions about heat pumps?

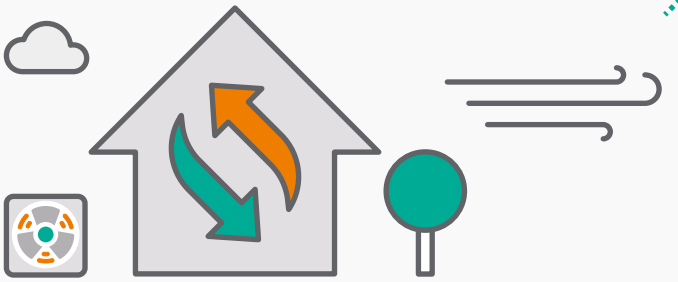
INSTALLER

Hello. Of course – I'm happy to answer your questions.

You can also find information about heat pumps on our website and on the gov.uk heat pump check service website.

Great, thank you. I'm aware of the environmental benefits of heat pumps, but don't know much about how they work.

How does a heat pump differ from a gas boiler?



That is a good question! A heat pump uses electricity to absorb heat from the outside air or underground. The heat extracted is used to heat your home and provide hot water.

Heat pumps are used in some homes in Britain already, and they're common in colder environments like Scandinavian countries. Heat pumps are much more efficient than gas boilers – for each unit of energy they use, they generate far more heat. They use electricity rather than gas too, so if that electricity is from renewable sources there's a big environmental benefit.

Okay, so will a heat pump still work when it is very cold outside then?

Yes, heat pumps still work efficiently even at temperatures below zero.

And will my home still be as warm as it is with a boiler?

Yes it will. However, compared to a gas boiler which provides heat relatively instantaneously, a heat pump is more effective when run continuously. This ensures your home is kept at a stable temperature.

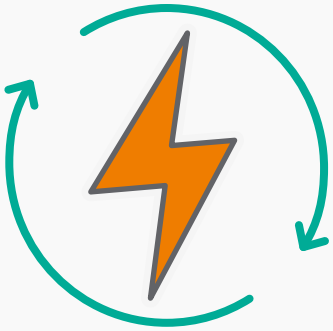
Many people actually find their home feels more comfortable with a heat pump.

CUSTOMER

Is it efficient to have the heat pump running continuously like that though?

INSTALLER

Yes, in fact this is the most efficient way to run a heat pump.



Does that mean my energy bills will be lower if I switch to a heat pump?

Since heat pumps run on electricity, your electricity bill will increase. However, you will be using much less gas, so your gas bill will decrease.

Your energy bills will likely be higher in the winter and lower in the summer. The overall difference will depend on how much you have the heating on, what temperatures you like, and also the relative prices you pay for gas and electricity.

I recommend looking for an electricity tariff that will make a heat pump as cheap as possible to run.

Alright, that makes sense.

Could I still keep my gas boiler in case the heat pump ever doesn't work or isn't heating enough?

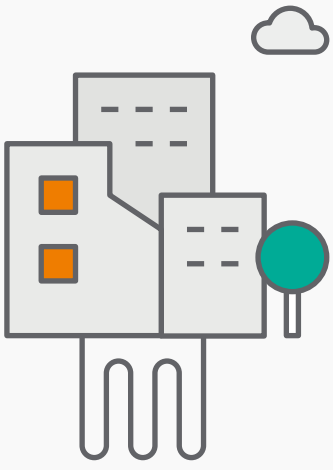
That is called a hybrid system. We usually install hybrid heat pumps in properties where there is no space for a hot water cylinder, so the gas combi boiler is there to produce hot water. But you do not need to worry about having a gas boiler for back up – heat pumps are very reliable.

That's good to hear.

I have also heard that certain properties are not suitable for heat pumps, is that true?

We have been installing heat pumps for close to a decade and have installed them in a wide range of properties. Heat pump systems can be designed to work for various different property types and comfort needs.

What type of property do you live in, and how many bedrooms does it have? Do you know roughly how old it is?

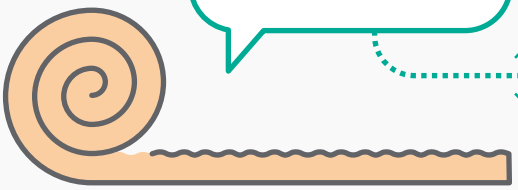


Our house is semi-detached with three bedrooms.

I think it was built in the 1960s.

CUSTOMER

Yes, it has cavity wall insulation, and we had the loft insulation done a few years ago.



INSTALLER

And does it have wall and loft insulation?

We recommend making your home as energy efficient as possible before installing a heat pump so that it uses less electricity.

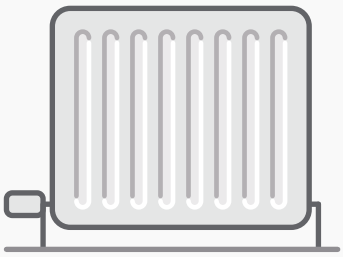
That's good. I also need to know if you have space somewhere inside your home where a hot water cylinder could be installed to store hot water for when you need it. They are about 150cm tall and 50cm in diameter and are normally fitted in an airing cupboard or in the loft.

And is there anywhere outside your property that the main unit could be placed if we installed an air source heat pump? The unit is a similar size to a medium size chest of drawers – you can see some pictures on our website.

We have a storage cupboard that would fit a hot water cylinder – we'd just need to move things out of it. And there is space in the back garden where we could probably put an external unit.

That's good too. Do you have radiators or underfloor heating?

We have radiators in all the rooms.



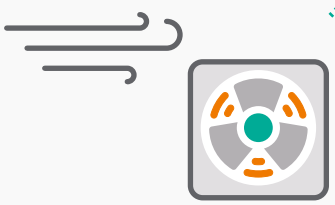
Great.

From what you've told me I think there are several types of heat pumps that would work well with your house, but to give you more details one of our designers will need to come survey your house and design the system first.

Depending on how big your radiators are, we will probably need to replace them with larger ones.

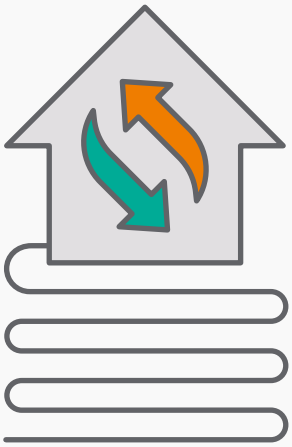
Okay, that's good to know.

What are the different types of heat pumps?



Air source heat pumps are the most common type – they extract heat from the air via the external condenser unit I mentioned earlier.

You also get ground source heat pumps, which extract heat from the ground rather than the air. To do this you have to dig trenches or boreholes in your garden to extract the heat from, which makes ground source heat pump installations more expensive.



CUSTOMER

How much does it normally cost to install a heat pump?

INSTALLER

The total air source heat pump cost is in the range of £8,000–£18,000. Ground source heat pumps cost around £14,000–£26,000 for a medium sized house, depending on the costs of drilling boreholes or trenches. Installing the heat pump unit costs between £5,000–£10,000, of which about 40% is for labour. A hot water cylinder is a further £2,500–£3,000 to install, and radiators will cost around £300 each to upgrade.

Is there any funding available to help cover the costs?

Yes – when we do a detailed cost estimate we'll include any available grants or funding, and help you through the process of applying for it.

Do you know if there is a valid Energy Performance Certificate or EPC available for your property? If not, you might need to have an EPC assessment done to apply for funding.

Yes there is a valid EPC for the house.

How many days does the installation usually take?

Will I have to vacate my house?

The installation typically takes three to four days as it requires a bit more work than a gas boiler installation, especially if we need to change the radiators and pipework.

You can stay in your house, though you will not have heating for about two or three days and hot water for about 12 hours. A backup heater will be provided if necessary.

If you decide to install a ground source heat pump, it will take a few days longer to dig the trench or drill boreholes.

And how noisy is a heat pump? I am worried my neighbours might be disturbed by the noise from the external unit.

Heat pumps do make some noise, though they're usually quieter than a gas boiler. Noise is subjective – most people do not have a problem with the noise. However, some people find them a bit noisy.

If noise is a concern, we could look at installing a low-noise model – many heat pumps these days are designed to be low-noise.

That's good to hear.

If you'd like us to survey your house and do a detailed design, let us know and we can arrange this.

SURVEY AND DESIGN STAGE

At the survey stage, the installer will assess the customer's house to determine the most suitable heat pump model based on their heating and hot water needs. This includes assessing the building energy efficiency levels and looking at possible positions of the heat pump in the garden, radiators in rooms, and placement of the hot water cylinder.

The installer might make two visits to the house – one to do a basic survey of the home, and another to do the more detailed measurements and design of the system.

INSTALLER

We'll start with a few questions about how you use heating in your home. What temperature do you usually heat your house to in winter? And when do you use hot water?

CUSTOMER

We like to heat our house to 20°C. We usually shower in the morning but bath the children in the evening. And we also use hot water for washing dishes then.

We're now going to measure the sizes of all your radiators, rooms and windows.

Are you planning to do any renovations or add an extension to your house? If so, I will need to add it to the design to make sure the heat pump will be able to sufficiently heat up additional space.

No, we're not planning to do any renovations.

Okay. Can we take a look at your garden next? We'll measure the ground area to work out if it is large enough to install a ground source heat pump.

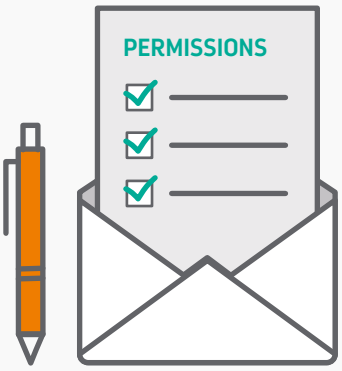
We'll also see where the external unit of an air source heat pump can go – it will need to be at least one meter away from any window and the property boundary.

Do I need to ask for any permissions to get the heat pump installed?

You do not need to worry about that as we will handle permissions on your behalf.

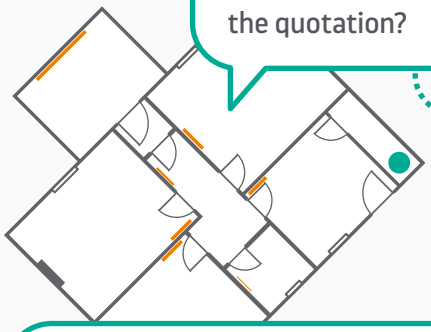
We will need to acquire a permission from your electricity network operator prior the installation. There is a chance that acquiring this will delay the installation, but usually it is dealt with quickly.

Planning permission usually isn't needed unless you live in a conservation area or listed building.



CUSTOMER

Okay. Will I be provided with the design as part of the quotation?



INSTALLER

Yes, we'll provide you with cost comparisons of the different options, brochures of the recommended heat pumps and projected running costs.

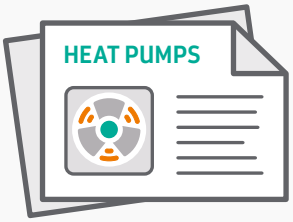
You'll also receive our design calculations. As part of the design we produce a floorplan showing positions of all the radiators, hot water cylinder and pipework. The design is tailored to your property and to your comfort requirements. We'll talk you through all of the information provided so that you understand what it means and have an opportunity to ask questions.

Can I review the design and perhaps make changes like having radiators in different places?

Of course! We produce bespoke designs to your house, and we are happy to modify it to your needs.

That's great.

And would it be possible for you to share images of the heat pumps you have recommended?



Yes, we will provide you with reference materials for the heat pump models recommended. In addition, we will show you photos of some of our previous installs, so you can see what everything looks like, such as the external units, the pipework, the radiators, and the hot water cylinder.

Thank you.

And will it be possible to monitor the efficiency of the heat pump and power usage once it is installed?

If that is something you want to do, we can install a heat pump with a monitoring system.

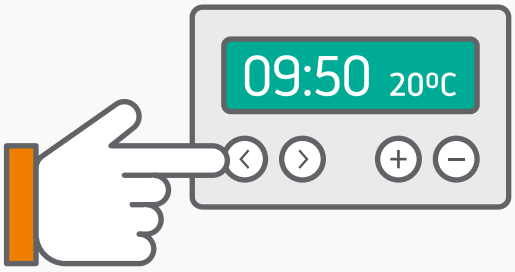
If you have any further questions, or if something is not clear, please let us know before the installation. Once you review the design and you agree with everything, we can schedule in your installation.

INSTALLATION STAGE

On the installation day, the installation team of three to five people will start work according to the previously agreed design. The installers aim to install the heat pump quickly and efficiently to minimise the disruption to customers' everyday life. Installers also tidy any mess created during the installation. During the installation, the installer will update the customer regularly on the progress of the installation.

POST INSTALLATION STAGE

After the heat pump has been installed, the installer will set the system up based on the customer's heating and hot water requirements. The installer will also show the customer how to use the heat pump controls and provide the customer with all the necessary documentation for the system.



INSTALLER

Your heat pump is all set up now and should provide the temperatures and hot water you need. You might find that with the new radiators it could feel too warm or too cold, in which case you can adjust the set temperature on the controls.

You can also change the hot water settings if you find you need more or less hot water at different times of the day.

We'll be happy to come do a follow up visit if necessary to make sure your settings are optimised for your heating routine.

CUSTOMER

Alright, that's good to know.

Where can I turn off the heat pump?

We do not recommend turning off the heat pump unless you are away from your house for an extended period, in which case you can set it to holiday or frost protection mode.

The heat pump runs at a lower temperature than your old gas boiler, so it takes longer to heat up the house. For the most economic and efficient running of the heat pump, it's better to have a relatively consistent temperature during the day and night.

Okay, thank you.

And what should I do if the heat pump breaks down or there is a fault?

If anything happens, you can call us and we will come have a look at your system.

In our many years of experience we have found that heat pumps do not break down nearly as often as gas boilers if properly maintained. We also do a maintenance check once a year.

Here is your Operation and Maintenance pack which contains all necessary documentation, like manuals, registration documents and electrical certificates.

Do also have a look at the page on our website about where to get the best energy tariff advice, and try switch to an electricity tariff that will make your heat pump cheaper to run.

Great, thank you very much for your help!