Heat pump 101: Your questions answered

All questions were answered by Bean Beanland from the Heat Pump Federation during a live webinar held on Thursday, 18th September 2025.

1. ***Do you have any information of when air-to-air ASHPs will be available under the Government grant, and what will the grant look like (will it be less than £7500)? Thank you.***

   The response to the Government's Boiler Upgrade Scheme and certification requirements consultation is due to be published in autumn. I believe that if air-to-air heat pumps are to be included, the grant value is likely to be significantly lower than the existing air-to-water heat pump grant.

2. ***Rumour has it that the temperature of water from heat pumps is lower than from a gas boiler. I need to have hot showers and radiators - will a heat pump suffice? If not, can I add a temperature boost system?***

   An R290 air-source heat pump (see Q8 for more on R290 refrigerants) will deliver 70°C if necessary. Arguably, this generation of machines are higher temperature heating devices than condensing gas boilers

3. ***The heat pumps at my neighbour's houses emit hums with different frequencies. My wife suffers from severe tinnitus and some frequencies make it worse. If we had a heat pump, it would be by the bedroom window (we have a bungalow). Is there any information on this phenomena?***

   If a heat pump might cause a fundamental problem for your health, there are other ways to decarbonise your home. Please note that an ASHP doesn't necessarily need to be right next to the building; if space allows then it could be located at a distance.

4. ***If using underfloor heating instead of radiators, roughly what percentage of efficiency is gained?***

   Most underfloor heating systems are designed with a maximum flow temperature of 45°. Low flow temperatures are good for the efficiency of both boilers and heat pumps. That said, it's perfectly possible to design radiator systems to run at equivalent low flow temperatures, so underfloor heating is not an essential prerequisite for a successful heat pump deployment.

5. ***a) What is the alternative to a larger hot water cylinder?***
   b) Can you speak a bit more about hot water tank alternatives? I'm comparing a combi boiler and a heat pump, and one of the draws of a combi boiler is not needing a water tank and saving that space in the house.

   You could consider phase-change thermal batteries that store the same amount of energy and use approximately 25% of the space. They will be more expensive, but costs will fall as the market scales. Horizontal cylinders can also be used in roof spaces. For very low hot water demands, the heat pump sector is beginning to develop instantaneous solutions for hot water, so watch this space.

6. ***Do this webinar's speakers have one in their own home? If so, what learnings can you share?***

   I'm in a private rented property and have been speaking to my landlord about options. I'm confident that we'll put a heat pump in when my boiler reaches the end of its life.

7. ***How long will a heat pump last? Would you recommend a hybrid system involving both air-to-water and air-to-air?***

   A good quality air source heat pump should last around 15-20 years; a ground source heat pump could last 20-25 years. It's important to keep up with general maintenance.

   In terms of a recommendation, it depends on what you're trying to do with it. Most people assume air-to-water is doing heating and hot water, and that air-to-air (what many people call air conditioning), is cooling the air. Most air-to-air systems will do both heating and cooling, and if you don't need two systems; you don't need to invest in two systems. If you have a requirement for cooling air, then you might be able to do both heating and cooling using the same air-to-air system, meaning you don't need an ASHP at all.

   If you've got an existing wet system (radiators / underfloor), it makes more sense to use it. If you do the whole house (heating and cooling) in air-to-air, you'll need a different solution for hot water. That could be an immersion in a hot water cylinder (in its simplest form) but there are new products coming out like heat pump hot water cylinders that just do hot water. Ultimately it depends on your priorities. I personally don't tend to recommend hybrids unless there's a good reason.

8. ***If I buy a heat pump now, how long will it be before it is made redundant by new technology?***

   You can think of this in a similar way to buying a new car or computer; the risk is that you could be constantly waiting. However, ASHP technology is mature and most of the significant developments have already happened.

   We are now getting marginal improvements in compressor efficiency, and improvements in controlling the system. A lot of manufacturers are now using third party software which will be updated in the same way that other software packages get updated. The heat pump itself is therefore unlikely to be made truly redundant by new technology for a long time. Models using R290 refrigerant (a natural refrigerant instead of a chemical refrigerant) have made a difference because they are delivering higher temperatures. The next changes are likely to be in this area; moving away from chemical refrigerants and towards more natural refrigerants.

9. ***What is the price range of heat pumps, and do you get what you pay for?***

   The single biggest factor to success here is the installer. It's absolutely vital that you research your installer and feel confident that they are competent, experienced and that they genuinely want to help you make a good decision.

   It's worth considering; if an installer is choosing a cheap machine, they are likely to be choosing cheap components as well, such as valves, and plastic instead of copper. On the flip side, those choosing higher quality heat pumps could have a higher quality of components overall.

   Yes; by and large you probably do get what you pay for.

10. ***What are the benefits of a heat pump over an electric combi boiler?***

    A heat pump will be significantly cheaper to run. An electric combi boiler will provide a ratio of 1:1 (energy in: heat out), and a heat pump can be nearer 1:3. A combi boiler also wouldn't qualify for the Government's Boiler Upgrade Scheme.

11. ***Is there any information on impact of moving to a heat pump on house insurance?***

    The Heat Pump Federation is engaging with the insurance industry. Currently, if your insurance covers a boiler, you wouldn't necessarily get that extended to

a heat pump. These sorts of issues are rapidly being addressed though as insurance companies are also increasingly under pressure to decarbonise their businesses.

12. ***If I'm also considering solar panels in the future, is there anything I should know now when considering a heat pump?***

    Third party controllers (software) are designed to integrate multiple technologies in a single home. Homeowners need to be confident that if they have multiple technologies (solar, battery, EV charger, heat pump) and a time of use tariff, that they all work together so you get the best possible outcome. This software is getting more and more capable of 'learning' how you want to control the different equipment in your home. I think if you're going for a heat pump first, I don't think there's anything you need to think about if ultimately going for solar PV later. When you go for solar PV, what you need to think about is how you make best use of that electricity for your own home. For example, summer will be different but by and large you want to be using as much of that electricity 'on site' as you can. It's also a good idea to consider where cable and pipe runs may need to be located in the future to reduce disruption.

13. ***We have solar panels with battery storage; would you recommend additional battery storage provision to run an air source heat pump?***

    There are new products becoming available here, such as custom-made batteries, but this is a very site-specific question so you'd need proper 121 advice. Very happy to support your research if you'd like to get in touch by email.

14. ***I'm in the process of buying an old house; it has loft insulation, probably no cavity wall insulation, it does have double glazing. It's over 100 years old. Will a heat pump work; does the house need lots of insulation?***

    My view is that if you can heat a building with a boiler, you can heat it with a heat pump. Added insulation is a good thing regardless of what heating technology is in place.

15. ***a) I live in a maisonette, would it be worth me looking into a heat pump, as there are properties each side of my flat and one above?***
b) I am a landlord of a first floor flat. Can I get a heat pump system fitted? I am in the process of getting an Octopus Cosy system fitted for the home I live in.

    Flats are tricky because ideally you'd get all properties to switch at the same time. It is possible to treat individual properties with air-to-air units, but this doesn't particularly look nice with units hanging off the building.

    There are some products coming, like wall-integrated air source heat pumps, but at the moment they are untried and untested. Some manufacturers are developing units made for balconies.

    The better solution would be a heat network, which means likely waiting for many years. This might not be a very attractive answer but there are other things you could do to decarbonise the property, for example by going all-electric with a home battery storage system, and go on a time of use tariff.

16. ***Significant areas of Southampton near the estuary rest on Pleistocene river gravel deposits in which tidal water ebbs and flows. How would I investigate the water source heat potential of this tidal aquifer?***

    You would need an installer who understands water-source heat pumps. Most currently are certified for air source only. Likely to also need advice from a hydro-geologist.

17. ***My gas central heating consists of 8 - 10mm small bore copper pipe. Is small bore compatible with modern heat pumps? We are not prepared to re copper pipe the house.***

    You would need an installer who understands how to deal with microbore. In most instances, microbore is not a barrier. There are some installers who don't want to tackle this (or worse, tell you it's not possible), because it provides a layer of complexity. You would just need to find an installer who has the engineering ability to deal with this. You're very welcome to get in touch if you're struggling to find a solution.

18. ***Please can Bean share the useful information he gave us on microbore radiator system and that it does not need to be a blocker.***

    There are some installers going for the 'low hanging fruit' – who will say it's not for them. Important that they shouldn't be saying it's not possible. Please always contact us for help in finding a solution.

Useful resources mentioned in this webinar

- www.visitaheatpump.co.uk for finding householders in your local area who are willing to show you their heat pump working in real time.
- Happy Heat Pump podcast episode on flats; published 9th January 2025.

My Home Made Better

This webinar was delivered as part of the My Home Made Better home energy advice service. This free and impartial service offers Hampshire, Southampton and Portsmouth residents an in-depth phone appointment about retrofitting their home, along with a follow up email containing recommendations and useful links.

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