



Questions and answers from the Bootcamp chat

<p>Is Biomass through wood pellets still something we should consider carbon neutral with Drax being a massive user of this? I'd love to know if it is a truly carbon neutral with so much being used.</p>	<p>Wood pellets are considered renewable if they are sourced from sustainable woodlands. The idea is that the amount of CO₂ released when burning the fuel is equal to the amount that the tree absorbed when it was growing. However, there are things to consider such as the growing time of trees and carbon created by transporting and production. In terms of Drax, you'd need to find out where they source their wood from. If it comes from within a 20km radius of their power station, then it is seen as carbon neutral.</p>
<p>Burning wood has similar carbon emissions to burning coal, and it takes decades for the carbon to be reabsorbed into new growth, which doesn't seem very compatible with a climate emergency to me. It also causes poor air quality both inside and outside the home. In some urban areas it is a bigger cause of air quality issues than road transport.</p>	<p>Absolutely, it's a very difficult topic as it's not quite as simple as the official information saying that burning biomass is carbon neutral. We discuss this more in the course itself, as well as in much more detail in the level 4 course.</p>
<p>What kind of stove would you recommend - gas stove or wood burner?</p>	<p>Recommendations depend on a number of factors – budget, size of room, availability of free fuel, and whether you want the heating appliance to do anything else apart from heat the room.</p>
<p>I know people with solid fuel burners, and, if they have an internal chimney, it does actually heat the whole house. We have a lot of 1940s/50s council houses which were built with coal fires, so the chimneys are all internal. It is worth taking this into account when considering solid fuel heating.</p>	<p>Heat can conduct through bricks and partially heat rooms that have a chimney breast in them. In terms of adequately heating the room, it may not be enough. If the council houses have access to natural gas, then it is worth installing gas central heating systems in them because that is a cheaper option.</p>

<p>How do you visually separate an air conditioner with a heat pump from the external unit? Also, there are pumps that heat and cool as well, would they be carbon efficient as well?</p>	<p>The first part of this question can only be answered by an engineer. You can get heat pumps that cool but you will be using energy for the cooling effect in the summer. The householder would have to compare the costs of using a heat pump for this or buying and using an air conditioning unit.</p>
<p>Why is it mainly air to water air source heat pumps (ASHP) being installed and pushed instead of air-to-air ASHP?</p>	<p>Air to water ASHP can utilise existing radiators to transfer heat into the home. Air to air will need a new heating system installed – similar to those warm air central heating systems that we talk about in Energy Awareness.</p>
<p>With ASHP, can you add extra piping at later dates?</p>	<p>You should be able to do this but I'm sure an engineer would mention the issue of then under-sizing the ASHP based on the additional heating that is required by the householder.</p>
<p>Which is more efficient, horizontal or vertical ground source heat pump (GSHP)?</p>	<p>A vertical ground source heat pump should be more efficient. The ground temperature between 0 and up to 100 metres should be warmer than the ground temperature at two metres (where horizontal pipes are laid). There is a positive correlation between the source temperature and the efficiency of the heat pump.</p>
<p>Can you combine PV with battery storage?</p>	<p>Yes, you can. If the householder has the budget, they can store excess electricity during daylight hours (in the battery) and use it when it gets dark.</p>
<p>What is the maximum temperature heat pumps produce in a well-insulated home?</p>	<p>It's not possible to give an exact answer here because it relies on so many factors. Such as: type and size of heat pump, soil type, and air temperature outside.</p>
<p>Are heat pumps cheaper to operate given they use electricity?</p>	<p>No, they are not cheaper to operate because electricity is expensive as a cost per kilowatt hour (kWh). Gas is much cheaper per kWh as is heating oil (at the time of writing).</p>