HPH323

Ben Adam-Smith 00:00
This is House Planning Help Episode 323. Hello, I'm Ben Adam-Smith, and this is the podcast for you if you're interested in self-build or retrofit. I'm exploring what houses we should be building in the 21st century and trying to break down some of the major roadblocks that may get in our way.

Ben Adam-Smith 00:19
Today, my guest is Nathan Gambling from BetaTalk, the renewable energy and low carbon heating podcast. We're going to have a complete guide to air source heat pumps.

Ben Adam-Smith 00:30
Before we get into that, though, are you building or retrofitting a house? Hopefully it is a definite yes, that's what we always hope on this, because if not, tell me why you're listening. And I wanted to remind you that we do run a free Facebook group. And what's good about this is I think, out of all the places social media is great, isn't it, you're here, there and everywhere, but this closed Facebook group always comes up with really interesting questions. And perhaps a lot of people in the middle of construction throwing up those questions. So, if you want to come and join us, we do our best to restrict spammers, keep them out, talkselfbuild.com will take you there by magic. Talkselfbuild.com.

Ben Adam-Smith 01:12
Let's get to our featured interview: Nathan Gambling from BetaTalk, the renewable energy and low carbon heating podcast. I imagine it goes a lot more technical. You know, sometimes I have to rein people back because I know, my brain will hurt if it goes too far, and I'm afraid that's the limit of this so check out his podcast for more. We're going to explore air source heat pumps. Again, it's a topic that comes up quite a lot on this podcast, but never have we dedicated an episode to air source heat pumps entirely. I started by asking Nathan to tell me a little bit about his background.

Nathan Gambling 01:46
I come from quite a unique background in heating. So, my grandfather was responsible for bringing oil pressure jet burners over to this country from Sweden, sort of 60s/70s. My great uncle was Lead Engineer and European Energy Manager for Unilever, and Unilever sort of, I think, were one of the world's first corporations. They acquired Birdseye back in 1930, or there abouts. And, obviously, those are associated with refrigeration, which is heat pumps. And so he was obviously in charge of some of the biggest refrigeration plants in Europe. I did my apprenticeship with the MoD. After that I wanted to go traveling and do all sorts of things. So I was able to dip in and out of the industry, then got into teaching in 2006. I was asked by a prison to come and teach a City and Guilds level one/level two Really liked teaching, then started to teach in colleges. Did that for about ten years. You know, the educational vocational education system in this country in my opinion is it's a big money-making machine. So, we tend to teach people to be qualified rather than competent. So I came out of that, but I still wanted to facilitate learning, so I got into podcasting where I could disseminate and amplify the

voice of really good engineers. Because the biggest pain point for a homeowner is they just do not know who a good engineer is. It's got nothing to do with qualifications, accreditation or experience. But you can be experienced and doing things the wrong way for a lot of years. So that's kind of why I started up the podcast, to disseminate and amplify their voice because it's one of the most important voices out there.

Ben Adam-Smith 03:23
Now this may be taking a slight u-turn already, but what would you need to become one of these people that you're talking about?

Nathan Gambling 03:29
The great engineers out there are constantly chatting with each other about different techniques, best practice, because heating is complex. I don't think people realise that. My cousin always says, you know, heating isn't rocket science, it's far more complex than that! Rockets have thermodynamic systems on. It can get very complicated, and you can go right down the rabbit hole with thermodynamics. So the good engineers are the ones that tend to be really sort of, so I promote peer to peer learning. And you'll find now that we live in this world of computer mediated communication, you know, things like your whatsapp groups, Facebook groups, there's engineers out there that are organically just start to chat with each other just to learn about stuff. Because sometimes it's not always training it's just familiarisation with what's sort of current and obviously this is an exponential industry now, where technology's changing. I mean, there's so many fittings and products in the plumbing and heating world. I mean, it's astronomical. So it's about keeping up with best practice.

Nathan Gambling 04:27
Anyone can start a plumbing company tomorrow, there's no you don't need to be qualified, you just need to follow building regs, water regs. If you want to do gas, gas is licensed, you obviously then you've got to go and get your gas certificates. You don't need a qualification to put in a heat pump unless you're doing it under MCS, which is where you're then getting a government grant. I mean one of the things to think about MCS is it's accrediting the company, it's not accrediting the actual individual engineer. So to become an MCS accredited company, installation company, you will have to have a nominated person who's done the qualification, which is just a four day course really. But that person could leave the next day and then you could employ whoever to come and put your plant and equipment in.

Ben Adam-Smith 05:05
What let's focus then on the individual who's either gonna have a house or be thinking I want to build a new house. And today, I wanted to just focus on air source heat pump because we haven't dedicated an episode to that before. So let's keep things as basic as we can, but with the good information. What is an air source heat pump?

Nathan Gambling 05:26
A heat pump is basically something that moves energy from an evaporator to a condenser, that's it. And it uses vapour compression to do that. We use a refrigerant where we compress it and we can extract more heat. So they literally are everywhere, you know that vending machine, coke vending

machine or whatever you want, that's got heat pump technology in it, a slush puppy machine, a Costa Coffee machine. They are literally everywhere in the commercial spaces. So lots of people who are working in offices, they will look up think that's aircon. It's not actually aircon, it's actually something called comfort cooling. Air conditioning does exist, but it's very, very rare. But what they don't realise is that's heating them as well in the winter. So it's in cinemas, retail centres. If you go into sort of these old pubs that have now been turned into Sainsburys or Tesco, the amount of vapour compression technology in that is astronomical. It's all up in the ceiling heating and cooling you. It's all on their metal shelves that are keeping the products cool in the fridge cabinets.

Ben Adam-Smith 06:22
For a home, what would the hardware look like? We talked about the heat pump - is the compressor within that and how does it come into the house?

Nathan Gambling 06:22
You'll find that, you know, since the '30s, our whole world is running on vapour compression technology. An air source heat pump is obviously extracting the energy from the air, whereas your ground source will extract it from the ground. I suppose one thing to mention is there's lots of energy, heat energy in the air because unless you're down to minus 273.15 degrees Celsius, that's when atoms stop moving, that's when you don't get any heat energy. So anything above that you've got heat energy, so even at minus 20, you've got astronomical amounts of heat energy. And then we compress that energy with a compressor. And then we release it out with a condenser. So they exist everywhere.

Nathan Gambling 06:48
So yeah, you've got different types of systems. So you're gonna find that most people talking about heat pumps for the home are talking about an air to water system. So most people are very familiar with water running around the radiators are underfloor heating. So your source for the heat is your air, it's transferring that heat to water. So that's an air source heat pump but air to water. Something like I've referred to like in your offices is air to air, which are actually starting to get a little bit more traction and awareness because they are a lot lot cheaper, and of course they can do cooling for you in the summer. So you'll probably find a lot of new build people or even retrofit, especially if you've got small flats or apartments, you can you can really, you know, an outside unit for a small flat is going to cost you about 500 quid and an indoor unit about 200. You might need two indoor units and you'll need an F gas engineer to install that and then you'll need a hot water strategy. So you might have an electric shower and then an under sink water heater for your kitchen sink.

Nathan Gambling 07:04
But most people when they talk about air source heat pumps for a building, they're talking about air to water so that your emitters which are your radiators, your underfloor, you can even get radiant panels for the ceiling. They're emitting the heat into the room, you're extracting the energy from the air and then you're emitting that energy into the room via water basically running around rads or underfloor heating.

Ben Adam-Smith 08:32
Can any house use an air source heat pump?

Nathan Gambling 08:38
Theoretically, yes. So, one of the ways I describe it, or help people understand about, is this thing about temperature that you need hot temperature to heat a leaky home. Well, the word, the term "leaky home" is quite problematic. All homes leak. You could have a mile thickness of insulation around a home, if there's a temperature difference between inside and outside, heat will move. That's the second law of thermodynamics. I mean, it's going to move extremely, extremely slowly but it will move.

Nathan Gambling 09:06
The average home in the UK, believe it or not, even though we get called leaky is 8 kilowatts at design outside temperature. Now what that means is, the average day in winter is seven degrees. The average coldest day is around minus three. It varies a little bit where you are, so in London, it's minus 1.8. But that's the average coldest day so we tend to design systems to be able to cope with that average coldest day. And most times in the UK, they need 8000 joules of heat per second to maintain 21 degrees inside when it's minus three outside. So 8000 joules per second is 8 kilowatt. Now what that means is when it's 10 degrees outside your home only needs now 3.6 kilowatts. If it was five degrees outside you'd need about 5.5 kilowatts. So that's quite important to understand. Your power demand inside your home is constantly changing depending on what the temperature is outside, because heat moves quicker if there's a higher temperature difference between inside and outside. So unfortunately, even with gas boilers, we've been putting gas boilers in for a long time now at fixed temperatures. They should really be modulating their temperature flowing around that radiator, depending on what the outside temperature is.

Nathan Gambling 10:18
Some of your listeners would have been to, I don't know a market or wedding or even a dance festival where you're inside that big, big marquee, and it's getting very, very hot, even in midwinter. And that inside that marquee has got a flow temperature of just 37 degrees. That's body temperature. But if you put too many bodies into a space, we all emit 100 Watts, we emit 100 joules per second of heat, if we're moving. That average house that only needs eight kilowatts minus three, you chuck a party with 80 people, you're maintaining the temp, and if it comes up to 10 degrees outside, boot a few people out, you only need 36 people dancing around! So you can weather compensate a party by just inviting people and booting them out depending on what the temperature is!

Nathan Gambling 10:58
So you can heat any property with low temperature. I suppose the best bit of advice I can give for people that want to retrofit or do a new build is the magic of getting really efficient air source heat pump systems is what we call narrowing the delta t between the source temperature and the sink temperature. So let me just explain that. So DT, delta t, just means a temperature difference. You're trying to match the temperature that's flowing around your emitters, your radiators, as close as you can to what it is outside. So if you've got this minus three outside, and you're managing to maintain 21 inside with just 40 degree water running around your radiators, that's going to be more efficient than if the system is running 50 degree water around your radiators, when it was minus three. So if you design your system to be able to reduce that flow temperature in your emitters, for the colder temperatures, that's when you start to see these really good what they call COPs - coefficient of performance.

Nathan Gambling 11:52
And the way to do that is with emitter size. The more surface area of emitter, so that's a bit synonymous with people, you know, the more people you've got in a room or a marquee, you've got more power being emitted. Now, we don't have radiators that can grow and contract in size yet, I mean, maybe in the future we'll have these shapeshifting radiators. So the way we account for the different power that we need, depending on the outside temperature is to increase and decrease the flow temperature going around the rads. So when you design a system, what you're trying to do, the good engineers are trying to design a system that will give you the lowest flow temperatures possible for the coldest temps. And the way you do that is with emitter size. So let's say if I was building a new build, I would have underfloor heating and radiators at the same time. So I've got all this surface area of emitter. So I've increased my power and I can have lower flow temps now flowing through the system.

Ben Adam-Smith 12:43
Now, a lot of us are building very low energy houses that they often say do not put in underfloor heating, because you're dealing with such subtle changes. Is this almost a separate category here? I know all the physics will be the same, but you're talking about a very small amount of heat that you need in the home.

Nathan Gambling 13:04
Yeah, you are, dependent on the size of the home, obviously. And this is sometimes where air to air can come into play. So see with an air to air system, which is a lot, lot cheaper, I mean, some people don't like the sort of comfort they give when they're in that office, they might be getting a dry air tight feeling, but usually that's down to system design again. But you can get very small units, outside units two kilowatt or three kilowatt. What you sometimes see with underfloor heating is people like it with air source heat pumps, because it can provide passive cooling in the summer. You don't really get that with rads, but again, if you're going air to air air source, you're then moving heat from inside and chucking it outside, and you've got that cooling effect as well.

Ben Adam-Smith 13:50
Let's just talk a little bit on the outside here. So can it be on any elevation of the house? Or are we looking to put it on the south side? How does this work?

Nathan Gambling 14:02
Citing a heat pump can be problematic. As you would know we've got some kind of archaic planning laws in this country, so sometimes that can be quite stifling. In England, for instance, you have to cite an external unit, these are air to water what we call monoblocks, a metre from the boundary. It does change actually in Wales and Scotland. I can't think what that rule is. But if you're in an area or let's say for instance, you're near the coast, the heat exchanger will be coated with a protective coating to stop salt corrosion. Some people don't aesthetically like the look of them, so they will try and cover them up. Well you don't want to cover them up too much because obviously you're extracting heat energy from the air so that fan needs a certain amount of energy from the air so that's it's sucking it in and you don't want to restrict that. Terraced houses, obviously you're restricted to sort of back gardens aren't you and things like that.

Ben Adam-Smith 14:55
What about neighbours? Do they ever kick up a fuss over noise?

Nathan Gambling 14:59
Noise isn't really an issue now. They have been in the past. But I mean, an outside oil boiler, for instance, is noisier, you'll find some of the gas flues are even noisier. So noise isn't really an issue anymore. I mean, yeah, if you're citing it somewhere which is going to be near your neighbour's window, and the thing comes on in the night time, they might be a bit displeased. But it's not something to worry about as much as what people do worry about if that helps.

Ben Adam-Smith 15:27
What about the sizing of the units in the first place? Or is there a process of how you would take a customer through this journey?

Nathan Gambling 15:37
Yes, now, when you size a heat pump, it's actually quite critical you get the size of heat pump right. I mean, lots of people have got 24/30 kilowatt boilers hanging on the wall. And they tend to be that big, because a lot of them are now Combi boilers. So they're doing a combination of two things. They're doing your space heating, going into your radiators, and then they're also then heating your hot water, but they're heating it instantaneously. So if you want to heat water instantly, water is very hard to heat up, it takes 4.186 kilojoules of energy to heat up one kilogram by one degree. It's an astronomical amount of energy to heat it up. So if you want to do it instantaneously, you need lots of power. So that's why people see these boilers of 30 kilowatts, but your heating load, I mean, you can heat a 30 room house with a 30 kilowatt boiler.

Nathan Gambling 16:19
So when you size a heat pump, you do want to get it quite accurate. And historically, the way we do that is with a heat loss calculation. Now, heat loss calculations used to go on in this industry. Back in the 60s 70s, early 80s, we were an employed industry, mainly by the British Gas board's local council. So you'd have designers that were doing all the heat loss calcs. And then as we become a sole trader industry, heating engineers, kind of... And it's not always their fault. There's a lot of marketing tactics that are pressurising engineers to do things certain ways, and perhaps not best practice. But we kind of lost touch with sizing systems. But that's actually now coming back in.

Nathan Gambling 16:59
So MCS will require you to do a heat loss calculation. Now the trouble with heat loss calculations, and U value, so that's RdSAP, SAP, it's a prediction. You're basically looking at the fabric of your home, you get your U value, but then you assume that every square metre of your home is performing the same. That never actually happens in the real world. So there is now methods where you can actually measure the speed of heat going through your fabric, and it gives you something called the heat and transfer coefficient. And once you know that coefficient, you know what power you need for any external temperature.

Nathan Gambling 17:32
This is very, very new to the industry. It is being used in new builds. Because what happens is you get an architect and the builder and they say right, this is what's per square metre is what this building is going to be. But of course, I mean insulation, everyone thinks installation is easy, but it's actually a science in its own right. And usually on a building site, the lowest paid person is putting the insulation in so you've got gaps. And things like retrofitting, the people putting windows in, you know, they might be a lovely triple glazed window, but people don't realise until they thermal image it that the outside of it is leaking energy astronomically.

Nathan Gambling 18:05
So, you can actually now measure heat loss. It's called heat transfer tests. It's being used to verify, so builders that are building homes that say they've got this particular heat loss, you can then go in with this equipment and actually test and verify that. Very, very beneficial for people retrofitting, putting lots of insulation in because you can do an HTC test at the beginning, have all your insulation measures then done, and then do a post test to see if it's actually done that much. You want to reduce your kilowatt load. Now, with this actual measurement, not prediction, so when you do SAP and heat loss calculations, u values, that's just prediction, you can get a real sort of understanding of how well your fabric is performing.

Ben Adam-Smith 18:47
Right. I'll stop you there because you've said something very interesting. And I'm more and more for evaluating how the building work has been done. So firstly, how similar, I don't know whether you know this, we chatted to Tom from Veritherm.

Nathan Gambling 19:00
I was with Tom yesterday.

Ben Adam-Smith 19:01
Ah, right. So it's this sort of system?

Nathan Gambling 19:04
Yeah, so you've got two kinds of systems. So, Tom's system, Veritherm, they will go in with equipment to heat up your property. So they'll put electric heaters around, maybe fans to distribute that heat. They're gonna put a load of sensors everywhere, temperature sensors, they're gonna put temperature sensors outside. So they heat your property up to around about 25 degrees, and they know exactly how much energy they've put into their electric heaters to heat that property up. And then they shut it down. They shut it down, it's an overnight test. So it's a quick test. I suppose there's a little bit of disruption if you have to move out but it's great for verifying new buildings. The algorithm just monitors the speed of heat leaving the fabric and it gives you this heat transfer coefficient.

Nathan Gambling 19:46
Another way of doing it is, I'll put five to six data loggers strategically around the home, and when I say strategically you don't want people moving into them, if there's young children you put them on a higher bookshelf for instance, you put them around the home you leave them in for three weeks. You take a

meter reading of like your gas consumption. I would measure up floor area, window area and orientation of windows. Because once I've collected them after three weeks and plugged them into the sort of the algorithm, which is an algorithm built by Build Test Solutions, and that's been tested by BEIS to be very accurate. It takes into account the weather data, solar data, into a final gas reading when you pick these things up. And that then also gives you the heat transfer coefficient.

Nathan Gambling 20:28
So once you know what your home needs, it's, it's not plain sailing, but you know, once you know what your home needs, you've got a greater understanding. But fabric first is, as you know, a bit of a buzzword. I always say measure first, because it's very easy for fabric measures to get very expensive, and no one at the end of the day knows how well they're performing. You might theoretically know how well, you might have a, someone say, "Well, you've never put this amount in, that's going to bring it down to this." Well, unless it's been put in very well, and that's actually quite hard to do, some of these fabric measures are actually quite hard to do and get them really, really spot on. So this way of verification is a great tool.

Ben Adam-Smith 21:09
If I'm understanding you correctly then, so we are going to size after we've built the building, got everything sorted as we think, is that correct? Or are you doing some rough idea of what you think it should be to begin with?

Nathan Gambling 21:20
Horses for courses. So if you're in a retrofit situation, you've got a budget and you know you want to do some fabric measures before you then sort of start to think about heating it. I mean, I would before I do my retrofit measures, I would actually measure the HTC, heat transfer coefficient, do your measures, then measure this HTC again. Because that does two things: that now tells you what your home actually needs accurately. It also means you might be able to bring your builder back and say, "Look, I don't think you've done a good job here because you've only reduced the kilowatt load by about one, and we were expecting it to reduce by maybe two". But yeah, once it gives you this accurate measurement, and then you would design your heating system to that.

Nathan Gambling 22:00
I mean, if you're doing it under a grant system, MCS still want you to do this heat loss calculation. That's just part and parcel. But MCS now are very aware of measurement, you're measuring performance, rather than predicting it. So we might see standards start to sort of change in the future.

Ben Adam-Smith 22:17
You mentioned in their grant, what grants are available now? I know the landscape has changed again.

Nathan Gambling 22:23
For the homeowner it's the BUS, which is the Boiler Upgrade Scheme. And actually new builders, if you're if you're not a developer and sort of building two, three, but if you're self-building your one property, you can actually access that grant, I believe. So that's the Boiler Upgrade Scheme - BUS. That's going to give you sort of five grand off of the total cost.

Nathan Gambling 22:44
I mean, lots of people, when you're in a retrofit situation, always say "Well, why? Why is a heat pump costing so much more than a boiler?" With a boiler basically, someone's coming in and swapping the boiler in and out. With a heat pump system, you've got to change some of the infrastructure. Not always, I mean, some people think every radiator has to be changed and all the pipe work. Not always. There's no panacea. It's very individual to each property. And as we've just said, you know, you can heat any property with a heat pump if you design it right. But I mean, there's, there's no if you're building a home or retrofitting a home and you don't need that grant for whatever reason, or you're not that bothered, there are engineers out there that aren't MCS that are still very, very good. Okay, the poor old homeowner isn't going to know how to spot!

Nathan Gambling 23:29
I mean, one of the ways I always say to people that want an engineer is just ask them a few questions. One of the questions I would ask an engineer is what flow temperature you're going to design my system for. And you want them to sort of be saying the lower temperatures. We have had a sort of a historical case of where heat pumps are put in with fixed temperature, bit like boilers, boilers are all going with fixed temperatures, they don't need to be they should be compensating. Now, all heat pumps come with weather compensation. So they should be automatically adjusting the flow temperatures going around your emitters, depending on what the outside temp is, but you can set them at a fixed temperature and unfortunately, that has been going on because it limits the warranty call outs and people going back to the system. So that's probably a first question you should ask an engineer. Do you weather comp your heat pump systems, or what design temperature of flow are you going to design it to. And that's going to come down to your emitters. So with underfloor heating, if they're going to be putting that down, a good question to ask is what centres do you put your underfloor heating down? Now what that means is the space between the pipe. The underfloor heating market is a very overcrowded market, so all manufacturers are trying to sell this stuff. They will tend to design it for the engineer and give the engineer and homeowner some lovely looking plans of where all this pipework is going. But you'll sometimes find they're at 200 or 150 centres. You want to really be putting your underfloor down at 100mm centres, because then you've increased the surface area and that automatically means you can run lower flow temps through it.

Ben Adam-Smith 25:02
Is it likely that the company that we get involved will do the design and their people will also do the install and perhaps the check afterwards as well?

Nathan Gambling 25:12
Yes. We are seeing a change, so I was one of the sort of people involved with MCS a little while back, saying, you know, design is a bit different to installation. So if you go back historically in the plumbing and heating industry, you would have designers designing all this stuff and then your fitters would go in and just fit it to plan. So there is now within MCS, a design qualification is now separate to installation qualification. You'll find most outfits out there do their own designs. There are umbrella schemes, so if a company isn't accredited with MCS, they will use an umbrella scheme who would do the design and

then your installers going in and work to plan. Again, there are companies out there doing the design who I wouldn't say are that great at doing it.

Nathan Gambling 25:58
I think people have just realised, or starting to realise you know, heating is complex. We've been an industry where you can just literally plunk a boiler on the wall and walk away. Everyone's wall, it'll work, it won't work for as long as it should do because they break down quicker. I mean, our country sells more boilers than anywhere else in Europe. I mean, up until 2016 we had the biggest gas boiler market in the world. And of course that's then created a problem because you've got so many companies now in this country trying to maintain them sales. They use all these different marketing tactics.

Nathan Gambling 26:30
So the big big four in this country, your Baxi, Vaillant, Ideal, and Worcester Bosch, you know that they incentivise an engineer to buy a boiler rather than repair. So they will fly you abroad to places like Las Vegas and Miami if you sell enough boilers. So they've got all these loyalty schemes that are actually incentivising people to, to even oversize. You might be putting in three boilers a week, you've worked out for the next fortnight, your six boilers only need to be 24 kilowatts, you walk into the merchant and they say, "Oh, we got a deal on a 30 kilowatt, you get 150 quid cashback." So the engineering thinks, oh, I'll buy six of them then and the person in the home ends up with an oversized boiler that's going to cycle a bit more than it should do.

Nathan Gambling 27:08
So that's a big problem. And it is starting to encroach into the heat pump industry. So the heat pump industry and everyone's awareness around heat pumps has been brilliant for people understanding that you can heat most homes with low temp, and your temperature should be changing anyway, that's compensation control. But we are starting to see marketing tactics. You know, one marketing tactic with a heat pump is oh yeah, we've got new refrigerant now that can heat water up to 60 degrees. So people think oh brilliant, that's an instant swap out to a boiler, but you're going to pay a lot more electricity on your bill! Because like I say, the secret source of a heat pump is getting the lowest temperatures running around your rads as possible. That's when you get your efficient heat pump.

Ben Adam-Smith 27:50
I have a couple more questions, and then we'll wrap up. So just sticking with the machine for the moment, are all manufacturers on a level? How do we work out that bit of the equation?

Nathan Gambling 28:02
They generally are all on a par. And one of the ways I always say is if you wanted a really good family portrait, an oil painting on canvas, you wouldn't go and research what's the best oil paint, you'd want a good artist. And it's exactly the same with a heat pump. You want a good engineer. A good engineer is going to make most units work very well.

Nathan Gambling 28:22
You've got three distinct things going on. So you've got units that come from what we call the HVAC world, the heating, ventilation and air conditioning world. So they're your things like your Toshibas, your

Hitachis, your Mitsubishis, Daikins, LGs. You've then got traditional heat pump manufacturers, things like Stiebel Eltron, NIBE, IVT. You've then got boiler manufacturers that have now got into the heat pump industry. So they're your manufacturers like Viessmanns, Vaillant. They are basically very much the same. It's that engineer that makes the difference.

Ben Adam-Smith 29:02
How long will we expect a unit to go on for?

Nathan Gambling 29:06
Oh, 20 years plus. Ground source heat pumps a bit longer.

Ben Adam-Smith 29:12
Do we need to do anything in terms of maintenance?

Nathan Gambling 29:16
Yep. So like anything sort of moving, working, you have a maintenance schedule. So that's your service, your yearly service. More expensive than a gas boiler service. So you will also have to do that or maintain that to maintain your warranty. Different manufacturers will give different levels of warranty, but you'll have to have it yeah serviced to maintain that warranty and it's always a good idea to get things serviced.

Ben Adam-Smith 29:41
And I've heard of hybrid solutions before, so what does that mean?

Nathan Gambling 29:48
So a hybrid solution is where you're hybridding it with another sort of heating technology. There's two ways to think about this. If you've got two different ways of heating your home, it can be advantageous. Out in Sweden now, they'll have their heat pump, and they'll have their woodburner. The hybrid thing is, it's being used by marketers to say that, you know, everyone can have heat pump, and you keep your gas boiler for doing the cold days. A lot of the time you're never going to need a hybrid to do that. It's just if you've got a good engineer, good designer, they are going to be able to do what they need to do.

Nathan Gambling 30:22
However, so let's say for instance, my cousin, my cousin still has his combination boiler to do his hot water, and he just stuck in, bear in mind he's been doing this for 40 years, he's stuck an outside unit on his wall, this is air to air, he's stuck an indoor unit over his bed, because he wanted to keep cool. Well, actually, I think he put this unit up just to train his apprentices to cut holes through the wall! And that four kilowatt unit in his bedroom can heat his house for most of winter. So it's forced convection blowing the air around, he's only got two bedrooms upstairs. The other one, I think the cat lives in mainly, so that door's shut. And then his whole downstairs is open plan, so that heat actually does get down there. If it's cold, his boiler comes on. And obviously, his boiler is doing the hot water as well. So you know, that's a very cheap set up, But you're gonna get the marketeers are already doing this thing, "Oh, yeah have a hybrid." So me personally, I think they're getting oversold. But that's not I'm not saying if you're building your own home, and you've got access to having different fuel sources, that's sometimes a

good idea. You know, you've got a wood burner and the electric goes out, you've got heat and put a kettle on it or something can't you.

Ben Adam-Smith 31:35
Is there any final thought that you would like to close with, or anything that we haven't mentioned perhaps?

Nathan Gambling 31:42
Like I say, lots of people will start to research the actual product. I think they get too hung up on the decibels and noise levels of different units and the SCoP of different units. And SCoP is a theoretical prediction of the performance that each manufacturer will give in their literature, doesn't mean it's going to perform like that, because again, it comes down to the installation. So my advice is if you're going to start looking around, trying to work out who is good in this space, like I said, it is extremely hard for the homeowner to do that. Because unfortunately, not all of them are good. Doesn't mean that, I mean the cowboy is not being good on purpose. But some people out there just need a little bit of familiarisation with best practice, and away they go, they're gonna be good.

Ben Adam-Smith 32:25
It is a fast moving world. But it sounds like that's a great thing that you're doing. So keep up the good work and keep that community of engineers going. Nathan, really enjoyed my chat today. Thank you for all the information.

Nathan Gambling 32:38
You're welcome. It's nice to meet you, Ben.

Ben Adam-Smith 32:40
Get more online in today's show notes at houseplanninghelp.com/323. There's a summary to peruse, as ever, you can take your time go through our takeaways. If you've got a comment or whether you'd like to ask a question, you can do that within the show notes or on social media. We'll give you all the links, of course to Nathan, and to the BetaTalk podcast. Houseplanninghelp.com/323.

Ben Adam-Smith 33:07
A quick hub update and then I'm out of here. We've put a new video in on our Kinver case study. So our in depth video case studies, we film all the way through entire builds or retrofits. And that's what we've done at Kinver, which is a retrofit project of a Victorian terrace property. Guy Hargreaves the homeowner. And in this particular chapter, we're looking at why buy-in with the subcontractors is so important, and some of the challenges on that, that if you're concerned at all about buy-in, maybe you don't want that person on site. Also the impact of making changes once construction has begun. What does that mean? And if all the players do buy-in and are committed, talking architect, client, builder, then that's a really strong recipe for getting through anything. You will have highs and lows on any project. But if you can just stay committed, stay the course, you're going to get to the end, and then you can maybe dissect all the learnings and so forth. So that's our current episode.

Ben Adam-Smith 34:10

We've also got the courses. We've quite recently put in a build systems course, there's the forum, the office hour where you can chat to me about anything that's going on in your project or any resource that you're looking for. In depth video case studies we mentioned. Live training, where we get guest experts in and probe them. All of this in our membership community The Hub - houseplanninghelp.com/join to find out more.

Ben Adam-Smith 34:36
Thank you so much for listening. The House Planning Help podcast is produced by Regen Media - content that matters.