

Episode 299

Is mechanical ventilation just something else to go wrong? – with Ben Adam-Smith

The show notes: www.houseplanninghelp.com/299

00:01

This is House Planning Help Episode 299. Hello, I'm Ben Adam-Smith and this is the podcast for you if you're interested in self-build, because I'm exploring what houses we should be building in the 21st century and try to break down the major roadblocks that may get in our way.

00:18

Coming up, it's a solo session as I share my relationship with my mechanical ventilation unit. Yeah, we're doing an episode on this. It's been compiled, well, using a mixture of going through old emails, Twitter, I think we'll feature a few tweets from past guests who've been on the podcast and experts. But a disclaimer at this point. I'm not an expert. I'm just a homeowner who is reflecting on my own experience, probably a unique experience. But I just thought, as we've done in the past, I did this multiple times through my own project, and as things developed. And actually, we'll put a link in the show notes to all the episodes that we did, about the design and construction of my self build project, so that if you haven't been there, you can go and explore some more. So this is just another one of those, a few years down the line after living in there, telling you about my mechanical ventilation unit.

00:25

First of all, it probably makes sense just to reflect on what we're talking about. An MVHR HRV, however you refer to it, it's heat recovery ventilation. And the idea being that as buildings get increasingly airtight, which is what you want, for a low energy building, ventilation is all the more important. You've got to think about it, you've got to be intentional. And then there's this clever twist that of course, by controlling the ventilation, you're then able to use a heat recovery unit so that when you want to keep that heat, you just pass it to the fresh incoming air. And that's the clever bit or dump it in the summer if you don't want the heat. But controlling ventilation makes a lot of sense.

01:14

For those of you that have been around here, these parts for a few years, you might remember that I actually made a documentary, The title was 'The Future of Housing, And How Airtightness Can Help', because I thought that people know about insulation, but they don't know about airtightness. And of course, when you seal up buildings, you've got to be increasingly careful about ventilation. So I'm going to put that in today's show notes as well. If you haven't seen the documentary, it almost feels like it needs to lead into another documentary, because it took me up until the point of saying, you know, I need to build a house and I need to build a Passivhaus. And now I've actually done that, and it's a few years down the road. So maybe one day, another idea under the cap there to do a follow up documentary of The Future of Housing.

02:41

So what's this all about, this particular episode? Well, my own unit, I've had a few error messages which have come up on the screen. And what that means is it's not normally fatal. It doesn't mean anything really bad. It's just telling you it's a warning that something is not quite right, and of course you'd want to investigate that. I suppose the issue with me is I feel like I've had my fair share, I don't want any more. That's what's happened here.

03:05

So I'll explain I think the first error messages that I got, although I trailed through my emails trying to find out what it was, but I have a feeling it might have been in relation to retrofitting a silencer. So I don't want to get too technical here, but there was one silencer missed out. And so a year down the road, when we came to do all the snagging, then that was the obvious point to repair it. And I think the machine might have been clever and thought, hold on, something's changed in your system and I know about it and flagged up a warning. So really, that wasn't a big one, and I believe it went away of its own accord. It probably just thought, oh nevermind, and got on with it.

03:47

So then might be a year later, if not a number of months later, there was a bigger issue. And this one didn't really make a lot of sense. It was saying external pressure warnings. It had some fan readings that just didn't add up. For example, it started reducing the speed of the supply fan. So certainly you could sense this in the house that it just didn't feel quite as even. If you've been into a Passivhaus before, you know, you open the front door, and that's the one moment you know it's a Passivhaus because firstly, you just feel that lovely, even warmth, and then you forget about it. But that, yeah, something was up. A noticeable drop on the airflow

and the supply, and just some of the readings didn't quite make sense, although I think maybe the extract, and I might be making this up, was saying that it had stopped but I'd actually go there and put a piece of tissue and feel it still sucking towards the extract ventilation points. At this point, we had a repairman come out and change some sensors, all back up and running, happy days and on we went.

05:00

Now, one interesting aspect of this is that when an error message comes up on the screen, you can reset it, and that buys you a bit of time. Sometimes it can be five minutes, sometimes it will be a day or so, sometimes it just seems to disappear again for a few weeks. I guess it's when those certain particular circumstances because it's just telling you, it's just a warning that this has happened, so things might have changed since then.

05:25

So that leads me to largely what this episode is all about when I had a frost unbalance at the beginning of the year. This was on the eighth of January, came down to my flashing red light, I thought 'oh here we go again, we've got to look into this'. And I was able to do this reset function that it seemed that it was connected to the very cold weather that we were having. So the nighttime temperatures, probably the coldest since we've moved into the house, minus two to minus five and resetting this, maybe things had warmed up a little bit, so we wouldn't get it for another couple of days while I tried to look into what this unbalance might mean, do I need to do anything? Is this just a warning, just telling me? You know, you don't really want to see warnings, and you assume that they're all connected, they are telling you these warnings for a reason that you should be doing something about it.

06:21

That trick worked for a little while, and then I went to reset it on maybe day two or day three. And the whole thing just went. The ventilation system stopped. I came back into the house and thought oh no, there's a light burning smell going, this is not good. And I tried, you know, turned the switch off, turned it back on again, nothing.

06:44

And I had a couple of concerns at this point. How long until we get this fixed? It's not always easy. Whenever you fix something it takes a few days as fast as you're trying to push things along. And also mould; that's another big one that I was worried. I heard about this before, there'll be a mould buildup, what if it's not even in a place that I can see? And that just means that this lovely healthy environment that I'm trying to create is not really as healthy as I think it is.

07:13

Fortunately, when it comes to the mould, I was quickly reassured by my friends in the know. Mark Siddell said this: the only mould risk in the ductwork would be the exhaust, which is the leg between the MVHR units and the outside. Consequently poses no risk to health. Furthermore, in low temperatures, mould risk is reduced.

07:33

So that was good. But now I have to until we resolve this, we're obviously going to work out and chat with various people to find out what is wrong. But we've got to survive in the house with no MVHR running. How do we do that? You'll like this. Opening windows! Yes, back to those good old days. If only I'd had trickle vents on my windows - no don't with those horrible trickle vent things! So what happened here, it's an interesting experiment to run, not one that you'd particularly want to do, but when you're forced into it.

08:03

So how do we cope? We're in this very airtight house, you don't notice anything in terms of the comfort because we still had a boiler, we've still got all the insulation, it's obviously an airtight house. It's just it doesn't have that ventilation. So we were having to resort to the manual ventilation, known as me opening the windows, annoying the family and it's still very cold outside! So you can see that from 10 minutes of the windows open, it definitely has an effect on the temperature. Not perhaps as much as you might think, because there's a lot of thermal mass keeping that heat. So that was good, I suppose.

08:42

The main thing that I noticed, actually was to do with smells! We're obviously a very smelly family! And my wife commented that each room had its own distinct smell, which with the mechanical ventilation switched on, you just don't notice and certainly cooking, things linger. And if you've got a mechanical ventilation system, it just takes it away. Just gradually, it doesn't do it straightaway, but a couple of hours later, and the smells are definitely going and then it's all gone. And Wolfgang Feist even commented saying that's how it is if you don't have a ventilation system, which is 90% of existing buildings. You will not get sick or die from this. But it's definitely more comfortable and healthy with heat recovery ventilation.

09:29

I woke up on one morning and was very upset in our washroom to find some condensation on the window. It was probably a tiny amount but when you never see it on there it's 'I've got condensation on my windows!'

09:41

So there's another point here that in chatting to Steve Clarke at Green Building Store who I had a few calls with, he immediately reported the issues to the manufacturer of our MVHR unit and then we went to diagnose the problem. And at some point we double check the power, and this is where embarrassingly, I have to say, I made a huge mistake here that I should have checked the trip switches on day one! Why did I not do that? It certainly came into my mind - I wonder if the fuse has blown in the plug? But I hadn't got round to that: it's lockdown, got kids keeping us busy, and that's just how it is in life. You know, as I say, if something breaks, it's not always the quickest path to getting it fixed for one reason or another, and it's probably me dragging my heels a little bit.

10:32

So I was very relieved when we found the trip switches that we'd somehow hidden behind a shelving unit. Probably my wife thought, 'oh, look at that horrible box there, I'll tell you what, we'll put this here and have all the gardening stuff in front of it. So I'd completely forgotten about the trip switches in the garage, was quite surprised to find them there, and very relieved to see the machine hum to life and realize what seemed quite urgent, you want the fresh air coming into the house, was now not quite so urgent. I think this is a really important point with mechanical ventilation is, it seems quite hard to destroy these machines and make them not work at all, which is exactly the point. So with some ventilation up and running, I'm now not quite so worried.

11:18

So it turns out that the pre-heater needed to be replaced. It wasn't difficult to diagnose. But there's a challenge here that the bright British, our wisdom of leaving the EU meant that the new pre-heater took several weeks to get here. And so the good side, I suppose, as I just mentioned, is that we're not in any rush now. And the cold weather had actually been and gone.

11:43

One interesting point here is about warranty periods. So, mine had gone past the two year warranty. Luckily, the manufacturers kindly sent me the new part for free, which is very kind, they certainly didn't have to do that, but it was out of warranty. And I did see one tweet from Mike Coe, who's the self-builder behind Portree

Passivhaus. He said, 'our building project is so far behind schedule, that when the MVHR is switched on for the very first time, it will already be out of warranty'.

12:15

So, it does seem a bit weird. Passivhaus dwellers, we need MVHR mechanical ventilation, it's essential, and then the warranty's not that long. But anyway, on this occasion, we were all okay.

12:28

There is a downside though, we now have to call in the backup engineer. That's me! By the way, I do ventilation in the house opening windows, and I'm now installing the new pre-heater. And again, Steve Clarke from Green Building Store, they were very good thumbs up to Green Building. So that was a good move actually, buying through them, through a company with good customer service has really helped.

12:50

And yeah, so here I am taking the front off the unit following Steve's instructions, and he can't even see this but he obviously knows the machines back to front and taking these screws out. And they get to a stage where you think hold on, remove this, take that out. Can we start putting stuff back in? I don't want to take any more things out. It feels like it's getting too complicated. But luckily, we got to that point of now you can start putting in the new pre-heater and putting everything back. And yes, it was all good. We won't know I suppose 100% whether everything is working until the next cold spell, which could even be next year. Fingers crossed that it's all going to work nicely.

13:27

So having gone through this, I felt like I should do a little bit of research to find out, has anyone else had an issue with their MVHR unit? Admittedly, when I post, it's largely within Passivhaus communities. And I didn't come up with much. Actually, Andy Simmonds, the chief executive from the AECB, he did his own retrofit project to an EnerPHit level, and I don't think he's had any issues with his own ventilation system. He mentioned that from his colleagues, he hadn't heard anything and his clients. But he did say that we do need MVHR and heat pumps to be as reliable as fridges. That's a good thing to have in mind. Except when I think about for example, our fridge, we had to buy a new fridge for the new house, and it's definitely not as simple as the fridge that we had before. This is our choice. Obviously, there are extra features that you have on this but they have a display, and this one has an icemaker and it has water going through it, you need to change the filters. So I thought that was interesting because we have had issues, we've had water pouring

onto the floor and we can't stop it. We've had ice clogging up and these horrible plastic filters that you need to change every few months. Whereas on the old fridge, I'm with him 100% that it was a fridge and it didn't really do much. The thing that was most likely to go was probably the plastic seal around the door. That was the first thing and then you couldn't use it obviously because the seal wasn't effective after that.

15:01

So Vladimir Pezel also tweeted me saying that he'd lived in his Passivhaus for eight years, no issues whatsoever. But his MVHR is an older and simpler unit and he said maybe less electronics. I think that's a really interesting point that everything is getting computerised. Obviously, they're complicating things, perhaps trying to get it to perform better to be more efficient, but there is a downside if you make things too complex.

15:28

Professor Fionn Stevenson also got in touch saying key MVHR issues in RSLs, which I think means registered social landlords: poor installation, poor commissioning, training, wrong balancing of air extracts, too much flexi-ducting, wrong size unit (too small), poor access to filters and units, no feedback response. must all get better. But what she finished on was saying it's good quality assurance, like Passivhaus, that is essential. And I think that's why on the whole, we don't have many issues. I am the blip today, but I just felt I should tell you about my MVHR stories in the hope that I'm not going to have another flashing red light story to tell you about.

16:16

So would I go back to natural ventilation? I think it's very easy to answer. Of course not! I think there are just too many benefits of having a mechanical system. And you wouldn't want to go back, you wouldn't want to go back to that losing all your drying facilities, losing the common sense of having moisture taken out of parts of the building that need moisture taken out, all the energy saving as well with the heat recovery.

16:41

So the mistake really that I've made was not checking those trip switches. And as I mentioned, putting the feelers out, I haven't yet met someone who said my MVHR has broken down. There have been a couple of tweets of very minor things that have happened, but no one's has broken down. And if it doesn't break down, if it keeps on chugging, it's a much smaller issue.

17:05

One thing that I did seem to notice, a few people were saying their machines had got louder. And I think that that could be in connection to maintenance. I do wonder whether MVHR owners do all the maintenance that it says in the manual, which is every 10 days, just the fans down. Yeah, it's perhaps a little unrealistic, you know, not every 10 days is not what they say. But there is a lot of maintenance that they suggest which I put my hands up and say maybe I haven't done all of it. But we must explore this in another podcast, it would make sense.

17:37

And I suppose at the end of this, as things develop, if there are more issues with mechanical ventilation units, it would be a godsend to have a 24 hour repair service that you just think I want my machine back on, let's phone up that person and they'll sort out the problem straightaway in the same vein that you would have a plumber come out if there was a leak, or a locksmith if you locked yourself out of the house. It's just one of those things that you want to have your fresh air supply.

18:07

So that's it for today. I hope you enjoyed that. I didn't anticipate another podcast on my own house but I thought you could be interested, possibly!