



If it's not a passive house, don't call it a passive house

Unlike popular terms like eco, green & sustainable, passive house has a specific meaning & shouldn't be used incorrectly, argues Passivhaus Trust technical director Nick Grant.

The recent rapid growth of Passivhaus (referred to as passive house from here on as per the editor's request) in the UK and Ireland has been a game changer. The number of buildings is still small but we already have multiple examples of detached homes, terraces, blocks of flats, offices, community buildings and primary schools. Most are performing embarrassingly close to the predicted energy and comfort targets. This is a statistical anomaly of a small sample but it's still impressive given the consistently poor performance of most earlier attempts at energy efficient building. This is one of the reasons for getting excited about passive house – it seems to work.

However I expect this wave of excitement to pass. Anyone jumping on the bandwagon soon realises that it requires

offer clients alongside zero carbon, LEED and BREEAM – they can't unlearn what they now know.

Passive house principles and fruit flavoured drink

One of the great things about passive house is that it's defined. 'Low energy' or 'eco' are worse than meaningless terms. One person's green exemplar might be someone else's nomination for a Mark Brinkley Eco Bollocks Award. By contrast it isn't difficult to check the claim that a building is a passive house. The Passivhaus Trust document Claiming the Passivhaus Standard¹ clarifies what it means to claim a building is a passive house. It is already having an influence internationally and the Passive House Institute has asked to translate it into German. If you are involved in passive house then you need to read it. If you find fault then help us improve it.

Passive house is an open standard and the term is not registered. But because it's understood to mean something specific, to describe a building as a passive house is to make a very unambiguous claim under consumer law. If you buy red shoes online and they arrive as blue you can claim your money back. What you've built may be better than passive house but if it doesn't meet the quality assured definition then you need to call it something else.

But what does it mean when people say that they couldn't afford to achieve passive house but are following passive house principles? Surely following the principles should result in a passive house. To my mind an acceptable use might be to describe a building as, say, 'built following passive house principles but achieving a PHPP-calculated annual heat demand of 21 kWh/m²/yr with a blower door result of 1.1 air changes'. It's almost a passive house but for some reason we just missed the mark and are being transparent about our claim. In marketing terms straight passive house is a simpler story – and a simple term for honest near misses would be useful. But passive house principles can't be used loosely to mean a passive house flavoured building.

I am reminded of this quote:

"I was working as a physicist. I read

that the construction industry had experimented with adding insulation to new buildings and that energy consumption had failed to reduce. This offended me – it was counter to the basic laws of physics. I knew that they must be doing something wrong. So I made it my mission to find out what, and to establish what was needed to do it right." – Dr Wolfgang Feist, founder, the Passive House Institute

15 years ago I had experimented by building our home using what I thought were passive house principles. The foundations are thermal bridge free, airtightness was 1.3 (n50). Insulation is continuous 400mm in walls and roof. Ventilation is passive to avoid the electricity to run fans, and heating is by a single woodstove with no radiators. I have seen arguments that lesser buildings than this are better than passive house so surely we can say we have followed passive house principles or even gone beyond them? But no, the 'passive house community' won't let us join their exclusive club!

Now that I know PHPP well, I'm pleased that they won't let us call our house a passive house as I have to report that our house's heat demand weighs in at around 90 kWh/m²/yr, six times that of a passive house. It gets worse: performing an expensive retrofit with passive house windows and heat recovery ventilation would only get our heat demand to around 50 kWh/m²/yr. If I wasn't able to point to other even worse eco-exemplars on a weekly basis I might be too embarrassed to share such an apparently spectacular failure. Had we modelled this building in PHPP it would have been immediately obvious that the problem is the form. Any experienced passive house designer would know it's not ideal but only the most experienced would guess how bad our lovely house is in energy terms. This isn't a passive house problem; it's a law of nature problem. Whilst most visitors experience our home as warm and comfortable, a passive house dweller would be less than impressed.

So if what you are designing, building or selling is not a passive house, then call it something else. Otherwise it causes confusion, annoys the passive house community and is probably illegal.

“Passive house principles can't be used loosely to mean a passive house flavoured building”

effort. The first project is particularly challenging because the passive house approach requires attention to detail and is very different to what we are used to. There is an awful lot to learn. Mistakes will be made.

This typically leads to one of three responses. 1) don't do it again, 2) cherry-pick the easy bits and call it something apparently non-committal like 'passive house principles' or 3) embrace it, learn from the experience and find ways to make it easier next time. Some who have embraced the challenge decide to only take on passive house projects. These people realise that passive house is a whole approach, not just another thing to

¹<http://bit.ly/RWni95>