

Passive design will be actively pursued in future

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THERE'S a rather convoluted access to this bold, brave house on the water at Carrigaline, Co Cork. And there's a rather convoluted build element too, because this earthy, unobtrusive build is one of the first, registered passive energy houses in the South.

Tucked away at the back of a settled, suburban estate, this two storey, split level house was designed by John Morehead of Wain Morehead Architects and has 238 square metre, (2,546 sq ft) with an upside-down living arrangement.

The entrance is at first-floor level from the road, (it's very private and you only come upon the house at the last minute), but it gives only a little indication of the full depth of the build, which is two-storey at the rear and faces south over the tidal Owenabue estuary. The hip home is in the vanguard of a new movement towards sustainability and carbon neutrality — the passive house.

Many people will be familiar with the concept — a house that doesn't need heating, but this method of building, or rather living, is gaining momentum as construction prices come down and fuel prices inflate.

Low energy usage and the elimination of central heating is the hallmark of the type, but it's air-tightness that is key to a passive house.

Think of it as a balloon full of air — that's the aim, and then think of a balloon with a valve at its neck that controls the flow of air in and out. That, more or less is the principle, keeping heat in, but letting stale air out, without compromising on temperature levels.

Using the same analogy, it's possible to describe older stock housing as leaky balloons, with gaps and spaces where air can get in — for instance, ever felt an electrical socket in a gale? Cold air can get in anywhere and the aim of the passive house is to seal everything up. That way there's no need for external boilers or other heat requirements. In fact, boiling your kettle can raise the temperature of a passive house by a degree or more.

Maintaining temperature is done via a heat recovery or HRV ventilation system where fresh air is pumped in and warmed by the heat taken from the stale air moving out of the house at the same time. The HRV systems take the place of a boiler, (average cost for a quality system around €5,000) and the passive house can hold a steady temperature of 16 to 21 degrees, depending on requirements. (This usually divides on gender lines, women at 21 degrees and men hovering around values of 16 degrees.)

Living in a passive house doesn't mean forgoing on good design or light. In warm weather, windows and doors can be opened and a passive house doesn't involve living in an enclosed prison, as might be imagined. Neither does it mean living in a squinty windowed, brown rice and sandals aesthetic either, as this house admirably demonstrates.

In fact, Wain Morehead have brought the passive house concept into the mainstream — from the perception of a frugal, grass roofed hobbit house, to a sleek, earthy family home that's a joy to just be in.

It's very impressive and architectural at first glance: it's ergonomic and easy to read as a building and there are no unnecessary flourishes, no grandstanding touches, just a really good design.

The owner pads around in bare feet, (tiles are toasty) and her small baba skitters around on all fours, inside and out because the design allows her to do this.

There's a flexibility here that not only makes the house climate-proof, but also gets rid of the main problem of having an upstairs living space — getting outside.

The integrated, glass covered deck is part of a larger winter garden that's fully sealed



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The integrated, glass covered deck is part of a larger, winter garden that is fully sealed and can be opened on a whim to the outside. And yet, it's also sealed to the inside, so the rest of the house isn't compromised, temperature-wise.

The winter garden area is also a solar collector set as it is in the middle of the run of rooms. It's current use is as a dining room, but can become a room outside by just folding back the accordion windows.

The commissioning couple wanted flexible space and enough room for a family of five: they also wanted a low energy/ solar design and when it came to the final drawings, it turned out the house met passive standards too.

So both architect and client decided to go the whole hog and seek accreditation. The house is now a CEHP build, a Certified European Passive House and has a little name plate by the front door saying as much.

But there were some snags — at the final stages, the builder, timber frame company and architect found an air leak and were utterly flummoxed as to where it was. Worse still, they couldn't find it. So they checked and finally decided to use thermal imaging at night to isolate the leak — everyone had to move out and it was located immediately — the satellite dish connection wasn't sealed and it was the only outside contractor. Something that small and simple has the power, in a passive house, to put out all the calculations. It's that good a system.

The family moved in last April and the owners say the HRV system is like the heart of the home, a gentle steady pulse that allows the freshest of sleeps and a temperature that's so even, it makes living the essence of comfort.

The house has a kitchen connected directly onto a grey deck, (which is recycled from old welly boots, according to the owner), an area which is overhung by a glazed canopy supported by larch beams — to match the larch cladding on the exterior. The wide eaves and canopy are there to reduce wind chill and deflect rain while cleverly, part of the glass is screened against high summer sun.

Every last detail is thought through here — there's even a concealed internal clothes hanger, a Wain Morehead staple, with a tiny radiator underneath to aid drying. (Another touch is a connector for a generator, in case the grid goes down).

Water is heated by solar collectors on the roof and there's rain water recycling too: gas is used for a back up hot water supply and there are heated towel rails in the bathrooms. Just turning on a rail will raise the temperature in the house significantly, say the owner, but they also have a newly patented heating system designed by John Morehead using infra red ceramic plates.

With four bedrooms, a number of bathrooms, two living rooms, one of which is the indoor/ outdoor space, this is a high-end house by normal standards.

But, it's stratospheric in terms of the exacting quality of the design, not just in the more obvious symmetry of the building, but at its core, in how it works for the family who live in it — that's where it really shines. A healthy fusion of form and function.

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