

# LOFTY AMBITIONS

A gritty Melbourne block provides a surprising showcase for two European-trained architects determined to bring the smarts of passive house design to more Australians. By Victoria Baker



Architects Marc Bernstein-Hussmann and Felicity Bernstein created a passive house for their family on the most unlikely of Melbourne blocks.



**WE LOVE A** sunburnt country, but it's taken us a long time to get on board with harnessing the power of all that sunshine in our homes. "When we first visited Australia in the early 2000s, we thought it was crazy no one was using all these abundant resources," says German-born architect Marc Bernstein-Hussmann.

"We always thought that if we came back, we would want to inspire people to do something that was more in harmony with the planet," adds his wife Felicity Bernstein, an interior designer and also a German-qualified architect.

Spoiler alert: they did come back, settling in Melbourne, establishing a family and founding green architecture firm Melbourne Design Studios to share their passion for ecologically aware design. That passion was the driving force behind the build of their own carbon-positive family home, but it turned out they would also need huge reserves of patience, persistence and resilience to bring it to fruition.

After acquiring a small, wedge-shaped block between a narrow lane and a train line in Coburg, in Melbourne's north, both council permission and bank finance were slow to materialise, with the couple and their three children living in a motorhome for a period while saving for the build.

Once work started, progress was relatively quick thanks to its construction using prefabricated cross-laminated timber panels, which slotted together seamlessly. The timber structure was wrapped in a waterproof and airtight membrane, and highly insulated triple-glazed doors and windows were added, before a layer of insulation and aluminium cladding completed

the structure. Recycled bricks, most of which were collected from local building sites and cleaned by the family, form a skin for the lower section of the home.

Viewers of *Grand Designs Australia* might recall the devastating fire which struck a month before the house was completed, setting the build back significantly. Once finished, however, the home achieved passive house certification, reflecting its energy efficiency.

Marc Bernstein-Hussmann explains the basic principles of the passive house construction methodology: well-insulated buildings and openings combine with heat recovery and ventilation. As a result, temperatures inside the building remain stable without energy escaping, and a heat exchanger ensures a constant flow of fresh air even when all the doors and windows are closed tight.

"Even at night time we can keep the windows closed and always have a fresh air supply," says Bernstein.

The naturalistic garden, by Eckersley Garden Architecture, belies the home's gritty trackside location and includes a fish pond that feeds water to a vertical aquaponic vegetable garden.

Aspect is everything: "There is a south-facing rainwater garden so there is always cool, moist air on that side of the house and in summer we can open a big sliding door there and a skylight at the top of the staircase and we get that natural thermal chimney draft effect through the house and can flush out the hot air," says Bernstein-Hussmann.

The interior of the home is also full of greenery. "We have a lot of living plants in the house which clean the air and are good for your mental health and wellbeing," explains Bernstein.





A green house can be simultaneously luxurious and sustainable, says co-designer Felicity Bernstein.



The wedged-shaped block is bordered by a narrow lane and a train line.

The house is not only the family's home, but doubles as a showcase for their ideas for prospective clients.

"A lot of the things we have in our house we had suggested to clients previously, but they felt like they were too strange, like the built-in planters inside the house and the green wall in the bathroom," says Bernstein. "People were hesitant because they couldn't visualise things. Now that we can bring people here, they can feel what a passive house feels like and see the difference in the doors, for example. Seeing and experiencing this house makes it really great for clients with their journey."

What's also important is the sense of luxury the home imparts, with its expansive stone-wrapped kitchen, deep bathtub and wood-accented living space.

Bernstein says it is always "feeling" that dictates her approach to the interior design and materiality.

"We define the mood we want to create and then look at what materials we can use that fulfil our ethical or planet-centric criteria. There is always a bit of that perception that if you build a green house it has to be a hippy home. I don't think it has to be. It can be luxurious and still be really sustainable. Because we want to build a house that's good for the planet but also for the inhabitants," she says.

The couple concedes that this kind of design can be expensive and therefore a non-option for many. "Cost is probably the biggest barrier," says Bernstein of access

to their custom architecture services. But they have plans on that front, too. The couple is working on Hütt, a series of prefabricated house designs. Customers will be able to buy a passive house-certified home for a more accessible price and then have it constructed at their location of choice. "Like the Tesla of houses," says Bernstein.

Also on the drawing board: a prefabricated panel system and supply of sustainable building supplies, plus a design school for those embarking on their own builds, or even volume house purchases to enable more sustainable choices.

"We are trying to filter down to the larger market," says Bernstein-Hussmann. "We ask ourselves, 'How much can we penetrate the Australian building industry with better quality and more sustainability?'"

Their work has certainly turned heads, with the Coburg house winning multiple architecture and design awards and featuring in Australian and German media. The Bernsteins are forging a new path, combining European technical knowledge and cutting-edge building products with a distinctly Australian focus on lifestyle-led design.

"We like to challenge the status quo," says Bernstein. "In Germany the technical standards are there, but Australia is really good on the design side of things, and the lifestyle. If you marry them both then I think you can have the ultimate house."



The house, including the timber-wrapped living area, acts as a showcase for potential clients interested in passive house design.

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