

Bright Passivhaus



The Bright Certified Passivhaus: A Story of Sustainable Living

Nestled in the picturesque town of Bright, Victoria, the Bright Passivhaus is more than just a home; it's a testament to our clients pursuit of sustainable living and architectural innovation. Conceived from a passion for environmental consciousness, this residence embodies the dreams of its owners, who sought a retirement haven that harmonized comfort with ecological responsibility.

Bright Passivhaus



Passivhaus Premium

Designed to be a Certified Passive House, this home is now successfully registered with the International Passive House Association. This wonderful home meets the highest standards of energy efficient construction at an international level and achieved a 'Passive House Premium' certification. This reflects the fact the house generates much more energy than it consumes. Passive House Plus buildings are more efficient (maximum PER of 45kWh/m2a) and will produce about as much energy as they consume over a year.

Even viewed through conventional assessments, this outstanding project attracts a NatHERS Star rating of 8.4 Stars, another measure of an exceptionally performing home.

The Lived experience

The owners of the Bright house have experienced a remarkable level of comfort and resilience, thanks to their thoughtful design and sustainable systems. During summer, without any supplementary cooling, the house maintains a temperature range of 20-24 degrees Celsius in all rooms, making it especially comfortable on hot days. They often utilize natural ventilation by opening windows at night to create a cross-flow and chimney effect, which can reduce internal temperatures by approximately 4 degrees overnight. This strategy, combined with the house's insulation and airtight sealing, means they rarely need to turn on ceiling fans or air conditioning during summer, even when external temperatures reach 40 degrees. On rare occasions, they activate the air conditioning using excess solar power for just one to two hours, after which the house quickly re-adjusts to a cooler temperature due to the thermal mass of the concrete slab and insulation.

In winter, the house's true north orientation and black tiled floors absorb and radiate heat from the sun, keeping indoor temperatures consistently within 22-25 degrees Celsius. The owners have found that they only need to use the split system heating for about 1.5 to 2 hours on sunny days, with ceiling fans efficiently redistributing warmth. Even during overcast days in mid-winter, the house remains warm and welcoming, with no cold passageways or drafts. During cold mornings when outdoor temperatures drop to -3 or -5 degrees, the house's internal temperature rarely falls below 17 or 18 degrees, ensuring comfort from the moment they step inside.

The underfloor electric mat heating in the bathrooms is timed for early morning and evening use, providing additional comfort without running continuously. Overall, the owners are pleased with the house's ability to maintain stable and comfortable temperatures year-round, eliminating the need to close doors or worry about temperature fluctuations in bathrooms or laundry spaces.



Bright Passivhaus



A Self-Sufficient Powerhouse

Their energy independence is supported by a 30kW solar PV system, with a 10kWh lithium battery that makes the home resilient during power outages. This ensures critical systems like refrigeration, heating, and air filtration remain operational during emergencies or evacuations. The three-phase power setup also prepares the house for high-demand appliances and electric vehicle charging, with one EV charger connected to the battery system.

Their hot water system is a 315-litre Sandon electric heat pump, which consumes less than 3kWh of electricity from their solar and battery system. This setup significantly reduces their carbon footprint and energy consumption compared to traditional resistant systems. They also enjoy the flexibility of managing sunlight and heat through external see-through blinds and internal Nordic blinds, which can be adjusted for privacy, glare reduction, or heat management depending on the season.

Water security is ensured by a 110,000-litre tank, which supplies their domestic and gardening needs for over a year. The tank is equipped with a Puratec filtration system, and mains water can automatically supplement tank water if levels drop, also filtered to ensure purity – an important feature during bushfire season when ash can contaminate water sources. This system aligns with their values of sustainability and ethical water use, avoiding reliance on the Ovens River.

Materials: Quality and Sustainability

The materials chosen for the house reflect a commitment to both quality and sustainability. Hoobler Stone graces the internal and external walls, while extensive outdoor living areas are paved with exposed aggregate concrete. Colorbond Enseam walls, PanelRib Soffits, and Monoclad Roofing provide a durable and aesthetically pleasing exterior. Inside, Iluka Blackbutt engineered timber linings adorn the walls, while birch ply express joint ceiling panels add a touch of elegance.

Living in a high-risk bushfire area, the house's design emphasizes fire resilience. The external envelope has no more than a 3mm gap, and flammable materials have been avoided. A gravel collar surrounds the house as an additional ember barrier, further enhancing safety.

The combination of high-quality, triple-glazed Logikhaus windows provides excellent insulation and noise reduction, contributing to the house's peaceful atmosphere. The owners appreciate the range of options for managing sunlight and heat—external blinds, internal blinds, and strategic shading – allowing them to adapt to seasonal changes and maintain comfort efficiently.



Bright Passivhaus



Passive Design Principles

At the heart of the home's design is compliance five core principles of Passivhaus construction:

- 1. Thermal Insulation:** The home is wrapped in a cocoon of insulation, with R4.0 external wall batts and R9.0 ceiling insulation ensuring effective thermal separation from the outside world. Even the garage receives special attention with R3.5 ceiling insulation.
- 2. Triple Glazed Windows:** Logikhaus triple-glazed tilt-n-turn windows and lift-n-slide doors not only minimize heat transfer but also provide exceptional acoustic insulation. Automated external Zipner blinds and internal honeycomb blinds offer further control over solar heat gain.
- 3. Heat Recovery Ventilation (HRV):** A Zehnder HRV system ensures a constant flow of fresh air into the airtight environment, promoting exceptional indoor air quality while saving energy.
- 4. Airtightness:** The building is meticulously sealed to prevent air leakage, increasing comfort and reducing energy bills.
- 5. Absence of Thermal Bridges:** Careful detailing eliminates thermal bridges, ensuring consistent thermal performance throughout the home.

A Legacy of Sustainability

The BrightPassivhaus is more than just a home; it's a legacy of sustainability. Its innovative design, energy-efficient features, and commitment to environmental responsibility set a new standard for high-performance homes.

The clients envisioned a home that would not only meet their needs for comfortable living but also serve as an example of what could be achieved through sustainable construction. They wanted to demonstrate that energy efficiency doesn't require compromising design possibilities or interior aesthetics. With a clear vision and unwavering confidence in their choices, they engaged Ovens & King Builders to bring their dream to life.

As the owners enjoy their retirement in this remarkable residence, they can take pride in knowing that they have created a home that will inspire others to embrace sustainable living for generations to come.

