

What is a Positive Energy house?

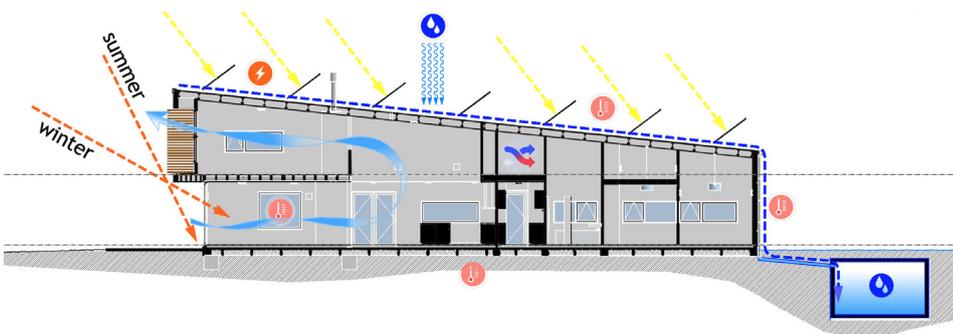
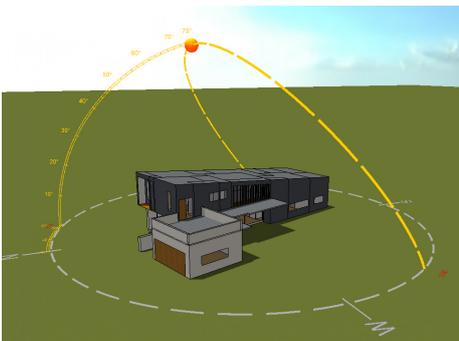
A positive energy house produces more energy than it consumes. This is generally achieved through first minimizing the energy demands of the house through efficient design and materials, followed by the installation of on-site renewable energy generation, such as photovoltaic panels or wind turbines, which ultimately produce a surplus of electricity.

What makes this a Positive Energy house?

This house minimizes energy consumption through the Passive House construction method as well as making additional energy-saving choices such as efficient appliances and lighting. As you tour the house, you will see signage for these items.

The Ideal House features an 8kW photovoltaic system that sits on the roof. The panels face north and are positioned for optimal performance. The 32 panels are not connected to a battery system but instead feed into the national grid. The net usage of the house is measured through an import-export meter which is located under the stairs.

- Produces more electricity than it consumes through use of onsite renewables, such as photovoltaic (PV) panels.
- Minimizing energy consumption of the house makes it easier to produce a surplus.
- This house has an 8kW system, comprised of 32 north-facing panels.



Images courtesy of eZED and S3 Architects

Thanks to the support of Westpac



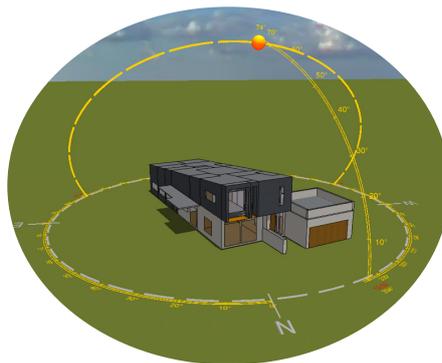
What is a Passive House (Passivhaus)?

Passive House has established itself as a leading standard for energy-efficient design. While most widely implemented in Germany, where it was originally developed in the 1980's, thousands of Passive Houses have been built worldwide, demonstrating the successful implementation of this standard in widely varying climatic, geographic and architectural applications.

Low energy consumption and comfort lie at the heart of the Passive House standard. This is achieved through:

- Extremely high levels of insulation.
- Exceptionally high-performing windows.
- An airtight building envelope.
- Mechanical heat recovery ventilation.
- Careful design which minimizes thermal bridging.

A Passive House is...



- Warm
- Comfortable
- Quiet
- Energy-efficient
- Thrifty to run
- Sustainable
- Long-lasting
- Innovative

A certified Passive House must meet the following key criteria in order to be certified:

1)	Space Heating Demand	Total amount of energy used each year to maintain a healthy, comfortable temperature	$\leq 15\text{kWh}/(\text{m}^2\text{yr})$
	OR		
	Peak Heating Load	Maximum amount of heat that can be added at one time, per m ² of usable living space	$\leq 10\text{W}/\text{m}^2$
2)	Primary Energy Demand	Total amount of energy required to run the building, measured per m ² of usable living space	$\leq 120\text{kWh}/\text{m}^2$
3)	Airtightness	Measured with a blower door test: total number of air changes per hour at 50 Pascals pressure in both pressurized and depressurized states	≤ 0.6 air changes per hour
4)	Thermal Comfort	Temperature of all living areas year-round	Not more than 10% of the hours in any giving year over 25°C

Images courtesy of eZED and S3 Architects

Thanks to the support of Westpac

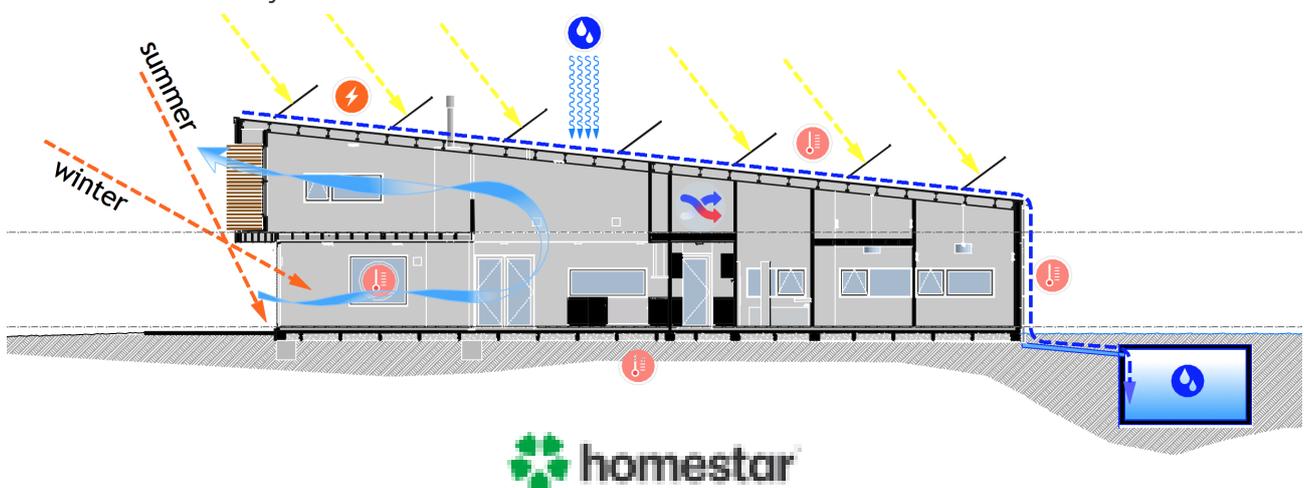


What is Homestar?

Homestar is in New Zealand's environmental and energy efficiency rating for both new and existing homes, administered by the New Zealand Green Building Council (NZGBC). The aim of Homestar is to improve the performance and reduce the environmental impact of new and existing homes in New Zealand, making them warm, healthy, comfortable places to live. It encourages homeowners to make informed decisions that will improve the performance, energy efficiency and comfort of their home.

This home has achieved an 8 star rating, reflective of the high sustainability of the house. Some of the features of the home which have contributed to this high rating are:

- Space Heating: The home maintains a minimum temperature of 20°C year-round without heating.
- Hot Water: Heat pump cylinder offers a 70% reduction in energy consumption as compared to a standard electric cylinder; the cylinder in this house is powered from self-generated electricity.
- Lighting: LED lights throughout interior and exterior of the house, exterior lights motion-sensor activated.
- On-site renewables: 8kW photovoltaic solar array will produce more electricity than required by the house.
- Moisture control: Fully insulated slab, and all walls, ceilings and floors insulated above minimum requirements. Whole house Zhender heat-exchanged ventilation system maintains a continual supply of fresh, dry air.
- Rainwater harvesting: 2 x 25,000L tanks supply all of the water to the house.
- Waste management: Recycling during construction reduces landfill. Worm farm, rubbish sorting and trash compactor help minimize waste production of occupied house.
- Stormwater: More than 90% of the site is permeable, reducing pressure on stormwater systems.



Images courtesy of eZED and S3 Architects

Thanks to the support of Westpac

