



Your **easi** guide to PassivHaus

easi
by **gentoo**
Reducing your carbon footprint step by step

gentoo
Living for a new **generation**

Your easi guide to PassivHaus

This guide gives you information about PassivHaus and how to get the best out of your new home.

What is different about these homes?

Passivhaus homes:

- **Are the worlds most energy efficient constructed buildings**
- **Are designed and built using a step by step approach**
- **Use efficient components and a whole house ventilation system to achieve exceptionally low running costs**
- **Are very comfortable, healthy and sustainable.**

These homes do not need a conventional central heating system. They are super insulated and therefore lose very little heat through the roofs, walls and floors. They are very draught proof, losing very little heat through warm air escaping through gaps in the construction. Fresh air is provided by a mechanical ventilation heat recovery system (MVHR).

Basic principles

A home which achieves the PassivHaus standard includes:

- **Excellent levels of insulation with minimal thermal bridges.**
- **Utilised solar and internal benefits.**
- **Airtight.**
- **Excellent indoor air quality, provided by a whole house mechanical ventilation system.**



How does it work?

Imagine covering a whole house in a tea cosy. Instead of just insulating the walls and the loft, the insulating layer is permanent. The emphasis is on super insulation and strict levels of air tightness to create a “tea cosy” effect.

The homes are also designed to optimise heat from the sun. The only technical bit is the mechanical ventilation and heat recovery system (MVHR), which provides the house with fresh air and helps to warm it by recovering heat from the extracted air and transferring it to the incoming air.

Most of the heat is generated inside the home from the body heat of people living in it, heating from lighting and cooking, as well as solar gain from sunlight. As a result you hardly need any traditional heating or air conditioning systems.





Mechanical Ventilation Heat Recovery System (MVHR)

As your home is super insulated and made very airtight, to keep the heat gains in, it requires a continuous supply of fresh air to ensure comfort and to remove stale air from places such as the kitchen and bathroom.

External fresh air is delivered into the house via the MVHR system, and is then distributed through a network of hidden ducts. Similarly the stale air is drawn out of rooms. The MVHR draws in fresh cold air from outside and as the fresh air is taken in the stale air is expelled. The fresh air and stale air pass through a heat exchanger which takes the warmth from the stale air and uses it to warm the fresh incoming air. This is then delivered to the rooms again through a network of hidden ducts. Only the warmth of the stale air is retained.

The MVHR system helps to reduce the amount of energy needed to heat your home but opening windows reduces this effect.

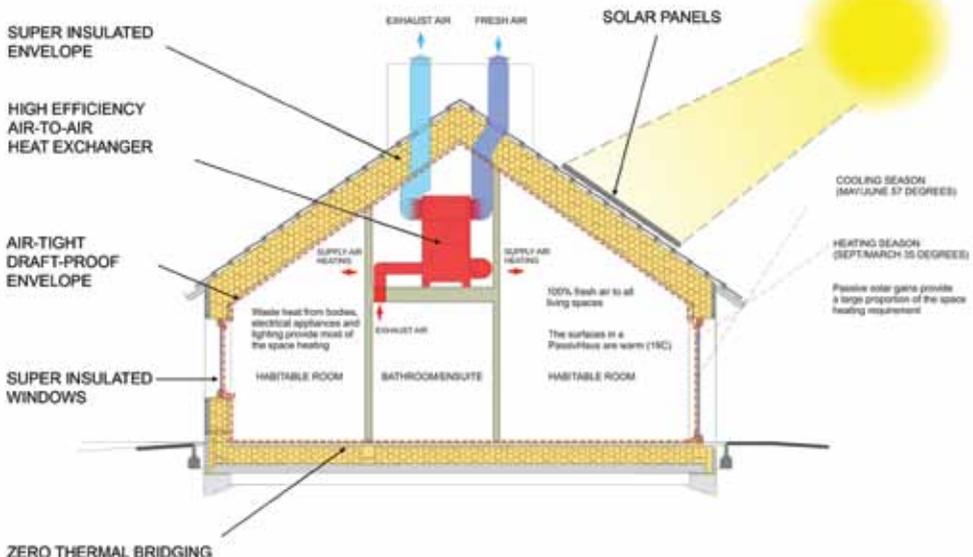


So what is heating them?

For most of the year you will not actually have to switch on any heating 'free' heat (solar gain) from the sun shining through the large south facing windows; plus heat from appliances you use such as TV's, computers, washing machines etc and from the occupants will be trapped inside by the super insulation. Only in winter when there is little sunshine will some top-up heating be required. Top-up heat will be delivered into rooms as warm air via the ventilation system. This heat is generated by a small heating coil fed from a communal gas boiler. Heat is delivered steadily as a continuous trickle rather than intermittent blasts.

How is the heating controlled?

There will be an ordinary heating thermostat in the living room which you can adjust to maintain a temperature which suits you. Because the demand for heating and hot water to each house is so low, one conventional gas boiler can do the job for the whole terrace. Heating pipe work will be fed from the boiler through all the homes at roof level.



Supplies are taken off this into each home and sensors measure the amount of heat used.

What about hot water?

There are solar panels on the roof. The heat captured by these will be directed to the hot water cylinder. This will not meet the hot water needs all year and some top-up will be required. The hot water will be topped-up by heating pipe work from the communal gas boiler.



Can I open the windows during the winter? Would I lose all the heat?

Although the windows can be opened, you would generally not need to open them for fresh air. The MVHR draws in fresh cold air from outside as stale air is expelled. The fresh air and stale air pass through a heat exchanger which takes the warmth from the stale air and uses it to warm the fresh incoming air. This is then delivered to the rooms through a network of hidden ducts. Only the warmth of the stale air is retained (due to some smart engineering, smells and odours are not recycled). The windows are triple glazed. So, when shut, they keep your home quiet as well as warm.

Can I open the windows in summer?

When it is summer and you are not heating your home, the windows can be opened and the mechanical ventilation heat recovery system (MVHR) can be switched to “extract-only” when needed to ventilate the bathrooms or kitchen.

What about cooking odours? Drying clothes? Steamy showers?

The MVHR has a boost facility to deal with cooking odours and steamy showers. This is controlled by a boost button in these rooms. In addition to the kitchen extract provided by the MVHR, there will be a recirculatory hood above the cooker which will also filter cooking vapours. We have provided you with an outdoor rotary drier, so you should not need a tumble drier. If you want to install a tumble dryer it must be the condensing type (or combined washer/drier), to avoid vent penetrations through the draught proof construction of the external walls. There is an airing cupboard which has a small radiator at the bottom and an exhaust to the ventilation system, to take moist air away. Normally the radiator is set to room temperature, but pressing the boost button in the cupboard turns it up for several hours to help dry clothes.



Can I make changes to my home?

Your home has been designed to be extremely draught proof. This helps it stay warm. This is the reason why there is an external mail box instead of a letterbox through the front door. To make sure that your home remains this way you should contact Gentoo before making any changes (adding new cable or satellite TV for example – even the hole for the cable would make a difference). Damage to the draught proof covering by peg, nails, screws and to the seals around window should be repaired immediately.

Some simple do's and don'ts if you wish to benefit the most from your home:

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| <ul style="list-style-type: none">• Do keep your windows closed as much as possible and,
Do keep the MVHR running continuously in winter. |
| <ul style="list-style-type: none">• Do use the best energy saving appliances (A++ rated) and low energy light fittings (compact fluorescents). |
| <ul style="list-style-type: none">• Do use the shower rather than running a bath as much as possible. |
| <ul style="list-style-type: none">• Do ensure taps are turned off when not in use. |
| <ul style="list-style-type: none">• Don't leave blinds or curtains drawn during winter days. |
| <ul style="list-style-type: none">• Don't alter your home without first contacting Gentoo for advice |

EASI stands for **E**nvironmental **A**wareness and **S**ustainability **I**mpact.

The EASI experience is our way of talking to you about environmental issues. Here are the five key areas in which we all must improve for a sustainable future:



Energy

We would like to work with you to reduce your energy consumption in the home, providing practical advice suited to your lifestyle.



Our Properties

We consider the environment for all of our properties, particularly using energy saving technology and helping you to use them in the most efficient way.



Recycling

We are working with you to help you to recycle more. We currently campaign to raise awareness of how and where you can recycle.



Transport

We champion your use of alternative transport and work to reduce fuel consumption when travelling throughout the day.



Waste

Reducing the waste we produce is essential; we have practical advice that will help you to generate less.

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