

## What is Passive House?

Passive House is a low-energy low carbon design standard. It gives us a design tool, the Passive House Planning Package (PHPP) and a quality assurance standard in the Passive House Certification process. Passive House was developed in Germany in 1996 a few years after the first experimental Passive House project. There are now over 10,000 Passive House houses, schools, offices and other buildings in mainland Europe. Only a few buildings have so far been certified to meet this standard in the UK but there are now a number of new build houses, non-domestic buildings and refurbishment projects underway.

Passive House delivers, through a set of simple design criteria and targets, over 75% savings in space heating requirements compared with standard practice newbuilds. This removes the need for a central heating system. As a further consequence it delivers very significant carbon emissions reductions and results in excellent air-quality and thermal comfort. It achieves this through high levels of insulation, minimising thermal bridging, super-efficient triple glazed windows, very high standards of air tightness (below 0.6 ac/hr) combined with highly efficient heat recovery ventilation and most importantly very careful attention to detail in both the design and construction. In simple terms of Passive House reduces heat loss to a minimum, and makes the best use of solar and internal gains to minimise the total remaining energy demand.

Passive House is the essence of the fabric first approach and reduces annual heating bills by a factor of approximately 10. It builds energy efficiency into the fabric of the building and so greatly reduces reliance on renewable and LZ C technologies.

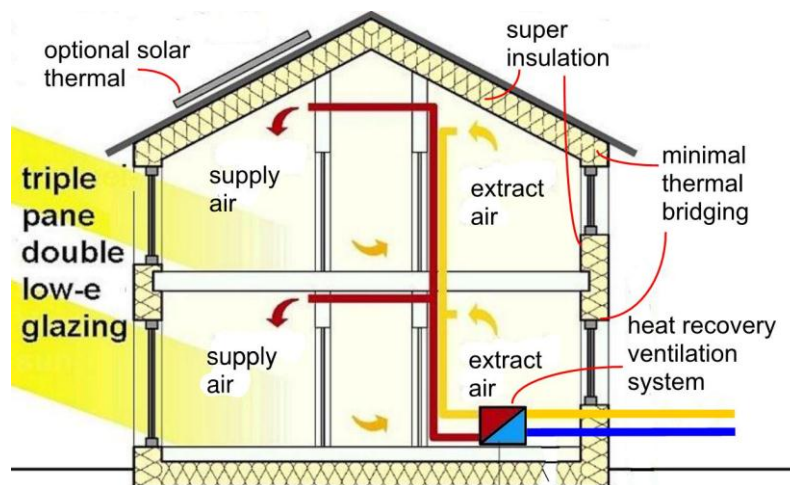


Image – Passiv Haus Institute

## Benefits of Passive House

**Low space heating demand** - below 15 kWh/m<sup>2</sup>/annum or 10 kW/m<sup>2</sup> energy

Any necessary space heating can be delivered through the ventilation system, eliminating the need for a full conventional central heating system.

**Thermal comfort** - Passive Houses remain warm in cold conditions and also control overheating in hot periods. Internal temperature differentials are also very low thus reducing the risk of drafts to a minimum.

**Excellent indoor air quality** - permanent fresh air, regulated humidity and no uncomfortable drafts. This greatly reduces the risks of dust mites and prevents mould growth both of which can have potentially severe health implications.

**Minimal technology** - In reducing demand Passive House also reduces reliance on complex technologies which can break down. When complex renewable and LZ C technologies fail both energy and carbon emissions rise, costs rise, and occupants suffer. By achieving outstanding fabric performance and removing the technologies a Passive House also removes the problem.

**Perform as designed** – Intensive post-occupancy monitoring has shown that Passive House buildings perform as well or better than designed and do not significantly deteriorate as they get older.