

PASSIVE HOUSE

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The term passive house (Passivhaus in German) refers to the rigorous, voluntary Passivhaus standard for energy efficiency in a building, reducing its ecological footprint.

Passive house is ultra-low energy buildings that require little energy for space heating or cooling.

The standard is not limited with residential properties; several office buildings, schools, kindergartens and a supermarket have also been constructed to the standard. Passive design is not an attachment or supplement to architectural design, but a design process that is integrated with architectural design.

The Passivhaus standard originated from a conversation in May 1988 between Professor Bo Adamson of Lund University, Sweden, and Professor Wolfgang Feist of the Institut für Wohnen und Umwelt (Institute for Housing and the Environment, Germany). Their concept was developed through a number of research projects, aided by financial assistance from the German state of Hessen.

By achieving the Passivhaus standards, qualified buildings are able to dispense with conventional heating systems. While this is an underlying objective of the Passivhaus standard, some type of heating will still be required and most Passivhaus buildings do include a system to provide supplemental space heating. This is normally distributed through the low-volume heat recovery ventilation system that is required to maintain air quality, rather than by a conventional hydronic or high-volume forced-air heating system, as described in the space heating section below.

Achieving the major decrease in heating energy consumption required by the standard involves a shift in approach to building design and construction. Design is carried out with the aid of the 'Passivhaus Planning Package' (PHPP), and uses specifically designed computer simulations.

To achieve the standards, a number of techniques and technologies are used in combination: passive solar design and landscape, superinsulation, advanced window technology, air tightness, ventilation.

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