

Climate protection with comfort bonus

Experiencing energy efficiency - Passive House buildings open for three days

Darmstadt, Germany. More climate protection in the building section is also one of the demands made by the climate activists of Fridays for Future. Extremely energy efficient buildings are part of the solution for more climate protection. Visitors will soon be able to experience first-hand, how little energy is actually required in Passive House buildings: Passive House residents around the world will be inviting the public into their homes during the Passive House Open Days from 8 till 10 November 2019.



This Passive House in Christchurch, New Zealand, will also be open to the public during the Passive House Open Days, ID 5225. © Passive House Institute New Zealand

First-hand experience: For three days, residents will open their Passive House homes to the public again so that visitors can confirm for themselves the low energy consumption and the perceptibly high level of living comfort. While heating systems in most conventional buildings

have already been running for some time, the rooms in Passive House buildings during typical November temperatures are heated using only the heat recovery ventilation system and through internal heat gains. The heat gains include solar radiation and heat dissipated by occupants and technical appliances.

Energy not needed

"Energy that is not needed in the first place is the most effective method of saving energy. In Passive House buildings, this type of climate protection is additionally associated with a high level of living comfort. That is what we wish to demonstrate with the Passive House Open Days. We are pleased that many residents of Passive House buildings around the world will be opening their homes in this year, too," explains Sabine Stillfried of the network IG Passivhaus in Darmstadt.

Climate protection on a broad scale

In Passive House buildings, additional heating is necessary only during extremely cold winter days. In this way, Passive House buildings consume less energy, and the heating costs are low. More and more owners of Passive House buildings are also relying on on-site generation of renewable energy. The generated electricity is then used e.g. for the heat pump. At the same time, Passive House buildings are equipped against overheating in summer because the good level of insulation, among other things, keeps the heat outside. In this way, urgently necessary climate protection can be extensively implemented in the building sector.



Before and after: After modernisation, this terraced house in Laudenbach (Baden-Württemberg, Germany) is now an exemplary building and will be open to visitors in November, ID 4664 © Passive House Institute

Diverse mix

An overview of the Passive House buildings that can be viewed from **8 until 10 November 2019** can be found at <https://passivehouse-database.org> A quick registration is requested for some of the buildings. Most participating buildings are residential use buildings including some of the category Passive House Plus and Premium which generate renewable energy directly on-site. Some administrative buildings, hotels, churches, schools and kindergartens are also inviting visitors.

Building for the near future

Due to the revised version of the EU Buildings Directive, since 2019 all public buildings and from 2021 all private buildings in the European Union must comply with the Nearly Zero Energy Standard (NZEB). The Passive House standard already meets the criteria for this low energy norm today. The Passive House Open Days are organised by the IG Passivhaus Deutschland, Passivhaus Austria and the International Passive House Association (iPHA). This event is taking place for the 16th time.



Also open during the Passive House Open Days 2019: (left) Passive House in Colorado, USA, ID 4497, © Andrew Michler. (Right) Hotel in the German Alps, Nesselwang, ID 1847, © Explorer Hotel.

General Information

Passive House buildings

With the Passive House concept the heat loss that typically takes place in buildings through the walls, roof and windows is drastically reduced: among other things due to high-quality thermal insulation, an airtight building envelope and windows with triple glazing. The five basic Passive House principles allow these highly energy efficient buildings to dispense with *classic* building heating. Such buildings are called "passive houses" because a major part of their heating demand is met through "passive" sources such as solar radiation or the heat emitted by occupants and technical appliances.

Because the heat stays inside the house, active heating is needed only during extremely cold days and only a small amount of energy is required for providing this remaining heating. In summer, the excellent level of insulation ensures that the heat stays outside, therefore active cooling usually isn't necessary in residential buildings. Due to the low energy costs in Passive House buildings, the utility costs are predictable - a basis for affordable homes and social housing. A Passive House building thus consumes about 90 percent less heating energy than an existing building and 75 percent less energy than an average new construction.

Passive House & NZEB

The Passive House Standard already meets the EU requirements for Nearly Zero Energy Buildings. According to the European Buildings Directive *EPBD*, all member states must specify requirements for so-called NZEBs in their national building regulations. These came into effect in January 2019 for public buildings and will apply for all other buildings from the year 2021.

Pioneer project

The first Passive House in the world was built in Darmstadt-Kranichstein (Germany) 28 years ago by four private homeowners. Dr Wolfgang Feist was one of them. Ever since the homeowners moved in with their families in 1991, these terraced houses have been regarded as a pioneer project for the Passive House Standard. With its newly installed photovoltaic system, this flagship Passive House now utilises renewable energy and received the Passive House Plus certificate for this reason.



The world's first Passive House building in Darmstadt-Kranichstein.
© Peter Cook

Passive House and renewable energy

The Passive House Standard can be combined well with on-site renewable energy generation. Since April 2015, the new building classes "Passive House Plus" and "Passive House Premium" have been available for this supply concept.

Passive Houses worldwide

Passive Houses buildings for all types of uses now exist everywhere. In addition to residential and office buildings there are also kindergartens and schools, sports halls, swimming pools and factories built as Passive House buildings. The first Passive House hospital in the world is currently being built in Frankfurt am Main. Interest in Passive House is growing. In view of the consumption of resources in industrialised countries and climate protection, municipalities, businesses and private people are increasingly implementing new constructions or retrofits to the Passive House Standard.

Passive House Institute

The Passive House Institute with its headquarters in Darmstadt (Germany) is an independent research institute for highly efficient use of energy in buildings. The Institute founded by Dr. Wolfgang Feist holds a leading position internationally with regard to research and development in the field of energy efficient construction. Among other things, Dr. Wolfgang Feist was awarded the DBU Environmental Prize in 2001 for developing the Passive House concept.



Dr. Wolfgang Feist
© Peter Cook

International Passive House Conference

The 24th International Passive House Conference will take place 20 and 21 September 2020 in Berlin.

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