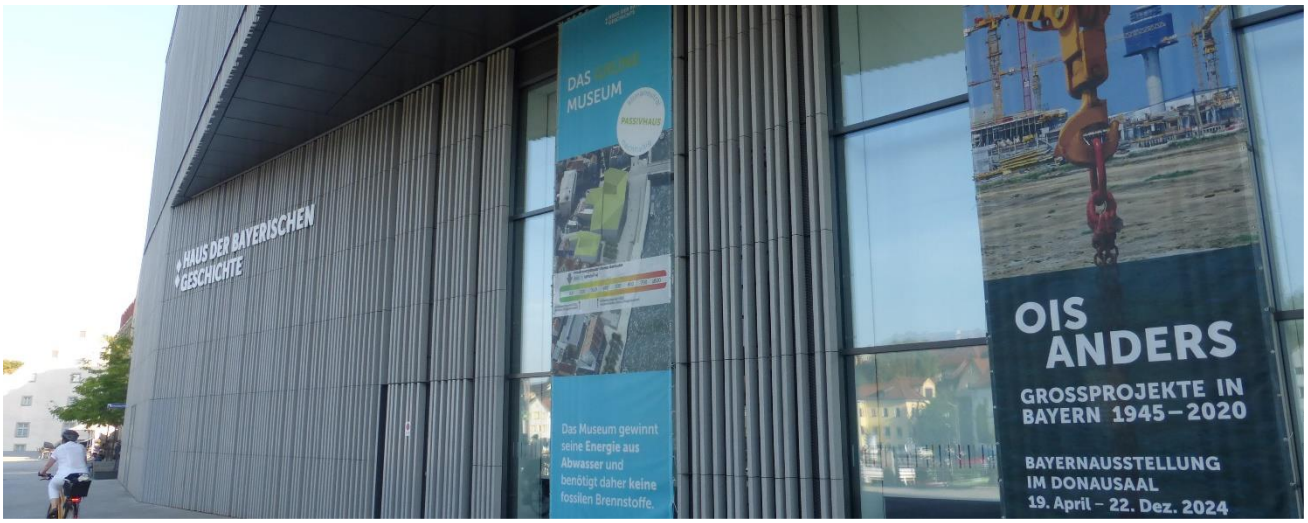
Press Release

1 November 2024



The House of Bavarian History in southern Germany recently achieved the Passive House certification. It is now the largest certified museum in the world that is built to the Passive House standard. **ID 6341**

History meets energy efficiency

House of Bavarian History is now the largest certified Passive House museum

Darmstadt, Germany. **The House of Bavarian History in the German city of Regensburg is now the largest certified museum in the world that is built to the Passive House standard. This impressive building was recently awarded its Passive House certification. The energy for heating and cooling is generated from the wastewater of the city by means of a modern energy centre that is compatible with the historic city centre.**

The façade of the “Haus der Bayerischen Geschichte” (“House of Bavarian History”) advertises the current exhibition with the Bavarian dialect title "Ois anders" ("Everything's different"). In a way, this also applies to the building itself. "We are Passive House!” said museum director Richard Loibl proudly when he received the Passive House certificate from Bavaria's Minister of Construction Christian Bernreiter. With 7,700 square metres of treated floor area, the House of Bavarian History is now also the largest certified Passive House museum in the world. The Passive House Institute, which ultimately reviewed the certification, was present for the handover of the certificate in Regensburg in southern Germany.

Presentation of the Passive House certificate (from left) Florian Lang of Herz & Lang, Museum Director Richard Loibl, Building Minister Christian Bernreiter, Mayor Gertrud Maltz-Schwarzfischer, Karl Stock, Head of Regensburg State Building Authority, Esther Gollwitzer, Passive House Institute, Thomas Spies, State Building Authority in Amberg, previously Regensburg. © House of Bavarian History

Exhibition in the House of Bavarian History, which also has its own restaurant and offers way more than just folklore. The museum is heated and cooled using the wastewater from the city of Regensburg, which has a population of 150,000. © Passive House Institute

Compensating fluctuations

The House of Bavarian History in Regensburg went into operation in 2019 after three years of construction. Its owner is the Federal State of Bavaria. The German planning company Wörner Traxler Richter won the architectural competition; they also planned the world's first certified Passive House hospital in Frankfurt, Germany. It was clear from the outset that the new museum was to be built to the highly energy-efficient Passive House standard. The Passive House designers from Herz und Lang undertook the energy consultancy and calculations. "The challenge was to ensure consistent climatic conditions in the interior spaces despite fluctuating visitor numbers and varying temperatures. This is particularly important for preserving the exhibits in the long term," explains Esther Gollwitzer from the Passive House Institute in Darmstadt, who reviewed the certification.

Lots of visitors mean lots of heat and humidity

Large numbers of visitors lead to high heat and humidity loads. Besides the requirement for completely doing away with fossil fuels, the goal was to guarantee indoor temperatures of between 18 and 20° Celsius in winter and between 23 and 25° Celsius in summer, with a constant air humidity of 45 to 55 per cent. To avoid problems with condensation, the requirements for building assemblies and component connections were therefore also high. In addition, solar radiation and the additional internal heat loads caused by media technology and the lighting for exhibits had to be taken into account.

Heating and cooling from wastewater

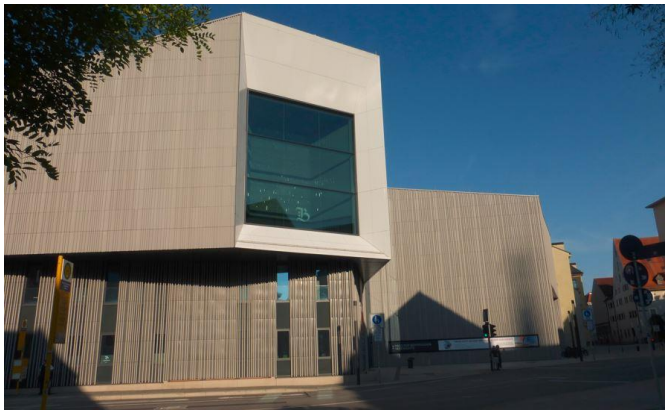
The museum uses the heat potential of the sewer system to supply heating and cooling. In 2018, the city of Regensburg put into operation an energy centre in which heat pumps supply the energy contained in the city's wastewater of 150,000 inhabitants for heating and cooling the museum. The main sewer provides a constant temperature level almost all year round. Heating and cooling is mainly provided using the floor areas of the museum. Peak loads are dealt with by the ventilation systems with heat and cold recovery. Humidification and dehumidification take place in some areas. Adiabatic cooling (evaporative cooling) is also available. In the context of operations optimisation, the running time of the building services technology, including that of the ventilation system, was reduced, and further energy conservation measures were implemented.

Optimised operation

Since August 2022, the museum has recorded total savings during operation of around 65,000 kWh of electrical energy per month as a result of the optimisation, as published by the museum in its 2023 annual assessment. "These high energy savings with simultaneous stability of the indoor climate in the exhibition rooms are only possible thanks to the high-quality and airtight building envelope, i.e. the Passive House standard. There is hardly any better argument for implementing a high level of energy efficiency in museums," explains Joachim Blaas from Herz und Lang.

Compatible with heritage preservation

Regensburg's Mayor Gertrud Maltz-Schwarzfischer pointed out that this modern museum building is already the second building for which the city has made it possible to generate energy from wastewater after its “House of Music” (“Haus der Musik”). Both buildings demonstrate how effectively renewable energy can be used in the historic part of the city centre: the use of heat from wastewater has been integrated into the existing sewer system and is compatible with heritage protection regulations. Bavaria's Construction Minister Christian Bernreiter explained that the highly efficient Passive House standard has proved successful not only from a construction perspective. Energy-efficient construction was an essential building block for achieving climate protection targets, Bernreiter said. The aim was to minimise energy consumption and, therefore, also reduce energy costs during operation. Museum director Richard Loibl indicated that the museum was planning additional adjustments. Energy consumption will be reduced even further and a photovoltaic system will also be installed, while part of the façade will be implemented as a "green wall".



The museum uses the heat potential of the sewer system to provide heating and cooling. In 2018, the city of Regensburg commissioned an energy centre in which heat pumps supply the energy contained in the wastewater. © Passive House Institute

"Passive" exhibition areas

In addition to the House of the Bavarian History with 7,700 m² of treated floor area (TFA), there are other certified Passive House museum/exhibition buildings which are accessible to the public. Some examples from around the world: In China, there are the **Technical and Experience Center** in Qingdao (7,535 m² TFA) and the **Experience Hall** in Taizhou (2,462 m² TFA), the Archive and Record Centre (HARC) in Hereford, UK (2,410 m² TFA), a car dealership in Red Deer, Canada (1,542 m² TFA) and the entrance building of the Museum Village Niedersulz in Austria (1,193 m² TFA). The **Ravensburg Art Museum** (1,287 m² TFA) was the first museum to receive the Passive House certificate in 2013 and was also awarded the German Architecture Prize in the same year. It also received the **Passive House Award 2014**.

The House of Bavarian History is now also officially a Passive House building. © Passive House Institute

This press release is available in different formats here together with images.

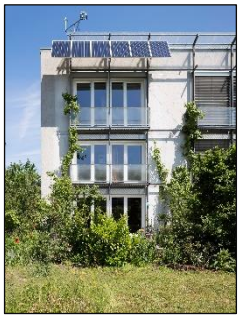
General information:

Youtube video 1928 House Renovation with Passive House Components

Youtube video Transforming Erlangen apartment buildings using the EnerPHit standard

Socially compatible and high energy efficient apartment blocks built to the Passive House standard. © Neue Heimat Tirol

Passive House buildings: With the Passive House concept, the heat loss that typically takes place in a building through the walls, windows and roof is drastically reduced. By applying the five basic principles 1. Excellent thermal insulation, 2. Windows with triple glazing, 3. A ventilation system with heat recovery, 4. Avoidance of thermal bridges, 5. An airtight building envelope, a Passive House building needs very little energy for heating and cooling. Passive House buildings can therefore dispense with a *traditional* heating system. A major part of its remaining low heating demand is largely met through "passive" sources such as solar radiation or the heat emitted by occupants and technical appliances. The Passive House concept works well also in deep retrofits of existing buildings. The Passive House Institute has developed the EnerPHit standard for this purpose.



In 2021, the world's first Passive House building in Darmstadt celebrated its 30th anniversary! © P.Cook

Advantages of the Passive House & EnerPHit standards: 1. Increased thermal comfort. 2. In winter the heating demand is very low: the heat escapes very slowly. 3. In Summer the cooling demand is low: the good insulation keeps the heat out. 4. Socially fair: low energy demand means low utility costs – which is the basis for affordable homes and social housing.

Passive House and renewable energy: The Passive House standard and generation of renewable energy is an excellent combination. The Passive House Institute has also introduced the building classes *Passive House Plus* and *Passive House Premium*. The world's first Passive House in Darmstadt has also been generating renewable energy after it was retrofitted with a photovoltaic system in 2015 and therefore received the Passive House Plus certificate.

Building uses: There are now Passive House buildings for all types of building uses. In addition to residential-use and office buildings, there are also kindergartens, schools, sports halls, swimming pools and production facilities built to the Passive House standard. In Frankfurt am Main, Germany, the Passive House certificate was awarded for the first Passive House hospital in the world.

PHPP: The planning tool PHPP (Passive House Planning Package) was developed by the Passive House Institute for energy balance calculation of highly energy efficient buildings. The energy demand is reliably calculated with this Excel-based tool during the planning phase.

Prof Dr Wolfgang Feist © Peter Cook

Passive House Institute: Founded by Professor Wolfgang Feist in 1996, the Passive House Institute is an independent organisation that holds a leading position in research and development relating to highly energy efficient construction and building retrofits.

iPHA: The purpose of the membership based international Passive House Association (iPHA) is the dissemination of knowledge as well as networking.

Social Media:

X: **@the_iPHA** Facebook: **International Passive House Association**

Youtube: **ipha**

LinkedIn: **@passive-house-institute**

Contact: Katrin Krämer / Press Officer / **Passive House Institute** / **www.passivehouse.com**
E-mail: **presse@passiv.de** // Tel: (+49) (0)6151 / 826 99-25