

# Efficiency House Plus

## Support Programme for Housing and Educational Facilities

The German Federal Ministry of Building launched a first support programme in 2012 for a housing prototype that fulfils the Efficiency House Plus Standard.

The Efficiency House Plus Standard is true if a building provides

- Negative annual primary energy demand:  $\Sigma Q_p < 0 \text{ kWh/m}^2\text{a}$
- Negative annual final energy demand:  $\Sigma Q_e < 0 \text{ kWh/m}^2\text{a}$

The programme supported constructors looking to develop buildings that produce considerably more energy from renewable sources than they need, with the surplus available to use as electro-mobility. The pilot projects are assessed according to a scientific evaluation programme. The results should help to improve the energy management of modern buildings. Additionally, the components required for an energy efficient building shell and the use of renewable energies should be improved.

### Detached and Semi-detached Houses

The Federal Ministry of Building supported 26 small residential buildings in the Efficiency House Plus Standard. The buildings provide a compact design and a very low heat and electricity consumption. The majority of energy needs are covered by environmental heat and photovoltaics. This generates more energy than is consumed.

### Apartment Blocks

During the first phase of the support programme the implementation of the concept concentrated on detached houses. Over the years the possibility of transferring the design method to apartment blocks emerged. For this purpose, a number of large housing complexes was built in Berlin and Frankfurt as Efficiency House Plus.

### Refurbishment of Residential Buildings

A great challenge in Germany is the refurbishment of the existing building stock, particularly in the sector of small private residences.

A semi-detached house located in Mühlthal, which had originally been built during the 1970ies, was one of the first existing buildings to be transformed into an Efficiency House Plus in 2013. The evaluation proved the concept to be working.

As a next step, an architectural competition was held with the task of refurbishing two identical rows of houses towards a positive carbon footprint. The two winning concepts have been put into practice in Neu-Ulm between 2013 and 2016. A scientific evaluation on the technical solutions used in these buildings was carried out.

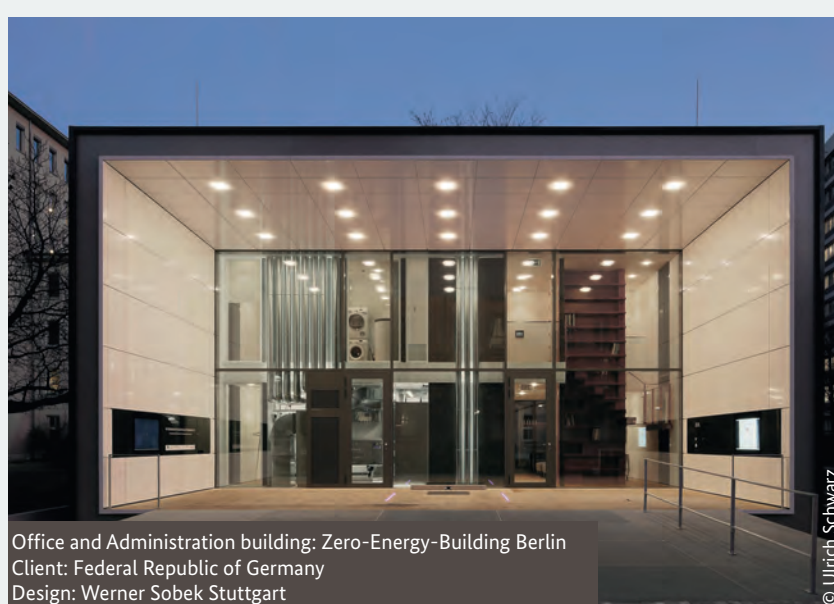
### Educational Buildings

After successfully introducing the Efficiency House Plus approach for residential buildings, the next step was to apply it to non-residential structures. Therefore, in 2015 the German Federal Ministry of Building launched a support programme for the construction of Efficiency House Plus educational buildings.

Educational buildings are especially suited for the concept of using on-site generated renewable energy that is produced by solar cells, since these buildings consume most of their energy-demand during daytime. The support programme was open for all kinds of schools, for kindergartens, universities and other research institutions.



For more information visit  
<https://www.forschungsinitiative.de/effizienzhaus-plus/>



Office and Administration building: Zero-Energy-Building Berlin  
Client: Federal Republic of Germany  
Design: Werner Sobek Stuttgart



Residential Building:  
Client: Bau-Fritz GmbH & Co. KG  
Design: Georg Schauer, Bau-Fritz GmbH & Co. KG



Residential Building: Effizienzhaus Plus HO Immobilien & Baukonzepte  
Client: Brigitte von Engelbrechten, Holger Osterloh  
Design: Gruppe GME, HO Immobilien + Baukonzepte GmbH



Educational Building: Louise-Otto-Peters-Schule Hockenheim, 2017  
Client: Eigenbetrieb Bau und Vermögen Rhein-Neckar-Kreis, Neckargemünd  
Design: Roth Architekten, Schwetzingen | Energy Design: Ing.-Büro Wilhaug GmbH



Refurbishment of Residential Buildings: Pfuhler Straße 12-14  
Client: NUWOG Wohnungsgesellschaft der Stadt Neu-Ulm  
Design: o5 architekten bda



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