Foreword to version 10 (2021)

There are now more and more buildings in which, in addition to a highly efficient building envelope, optimisations of the building services and the generation of renewable energy are implemented. This enables the certification of new builds or retrofits under the Passive House classes Plus or Premium. We consider this an encouraging development and appreciate the ambition of the many planning teams and building owners striving for maximum energy efficiency in their projects.

The previous version of the Passive House Planning Package included key features: the new, future-oriented concept for the evaluation of energy efficiency with renewable primary energy factors (PER); the introduction of the Passive House classes, combining high energy efficiency in buildings and renewable energy generation; the possibility of several planning variants; and staged retrofits. This new version includes many new features and improvements as well:

Varying boundary conditions for the purposes of testing and comparison

Energy efficient planning with the PHPP presupposes certain boundary conditions and user behaviours. Although they can be modified by the designer to a certain extent, these are fixed for the evaluation of the energy efficiency of the building. At the same time, with rising summer temperatures in recent years, ensuring summer comfort is becoming increasingly important. What happens if the summers are warmer than depicted by the climate data and assumed to calculate thermal? Is a higher energy consumption plausible if the user has set higher room temperatures, although it was warmer than usual in the winter? Such questions are answered by the newly implemented, systematic stress tests for summer comfort. Furthermore, a new worksheet to enter monitoring and weather data can be used to calibrate a comparative energy balance. This is shown in parallel to the actual PHPP calculation to assess whether the energy consumption of the building is as planned, or whether settings can possibly be optimised.

Extended input assistance

The error messages and plausibility warnings organised centrally have proven successful in supporting data input in the PHPP. Previously, a lot of input data still had to be determined and collected in separate secondary calculations. The compilation of this data is now possible through the external tool **Room Data**, which enables entering the information for each individual room: areas, utilisation profiles, and ventilation or lighting requirements. This information is then processed and sorted out for an easier and more comprehensible input in the PHPP.

Comprehensive additions to components and secondary calculations

The new PHPP also includes numerous secondary calculations for the evaluation of building components, or for components which have been developed in the past few years. This includes, for example, the calculation of the minimum surface temperatures that would be acceptable for a given relative indoor air humidity. In addition, the input of components in the PHPP was further developed and extended to include heat pumps. In this way, the data for split units can also be entered conveniently.

A method to determine project-specific primary energy requirements for multi-family buildings has also been implemented. This allows the adjustment of the primary energy requirements for residential buildings with high occupancy densities or where more extensive utility systems are used, as an accordingly higher specific domestic or auxiliary electricity demand is then to be expected.

Data input for the southern hemisphere and database interface

Previously, projects in the southern hemisphere had to be entered mirrored at the equator, a procedure that was often difficult to get used to for new users of the PHPP. With PHPP 10 this will no longer be necessary. All projects worldwide can be entered with the actual orientation, as is usual for project planning.

The **Overview** worksheet, which was integrated in the last version for test purposes and to ensure an overview of the most important project parameters, has been revised and supplemented with many result charts. In addition, an interface was prepared which will allow transferring all relevant project data to the Passive House Database in the future, making it easier to showcase thoroughly planned, successfully realised and sustainable Passive House new builds or EnerPHit retrofits.

Updates for components and climate data, availability online

In view of the trend for making almost everything available on the internet, with PHPP 10 the distribution of this Passive House calculation tool as well as the relevant manual will move to virtual platforms. Users will have an account to download the latest version of PHPP and access the manual, which is now available as a Flipbook online.

With this user account, additional tools developed by the PHI will also be made available, as well as updates for certified Passive House components and the steadily growing collection of climate datasets for the PHPP. To further facilitate things, these can now be conveniently transferred into the PHPP with a macro.

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- Input and calculation of design variants and retrofit steps
- EnerPHit retrofit plan for staged retrofits
- Economic comparison of design variants
- Verification of building component qualities for EnerPHit retrofits in all climate zones
- Validation of the applicability of the PHPP for buildings with low energy efficiency (e.g. not retrofitted buildings).

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We would like to thank you for the continuous feedback related to the practical application of the PHPP. We would also like to thank the group of beta-testers for their valuable contributions and suggestions for improvement. And, we look forward to receiving suggestions and constructive criticism in the future regarding the version at hand.

Darmstadt, November 2021

The team of authors of the PHPP

[1] The sole responsibility of this publication lies with the author. The European Union is not responsible for any use that may be made of the information contained therein.