

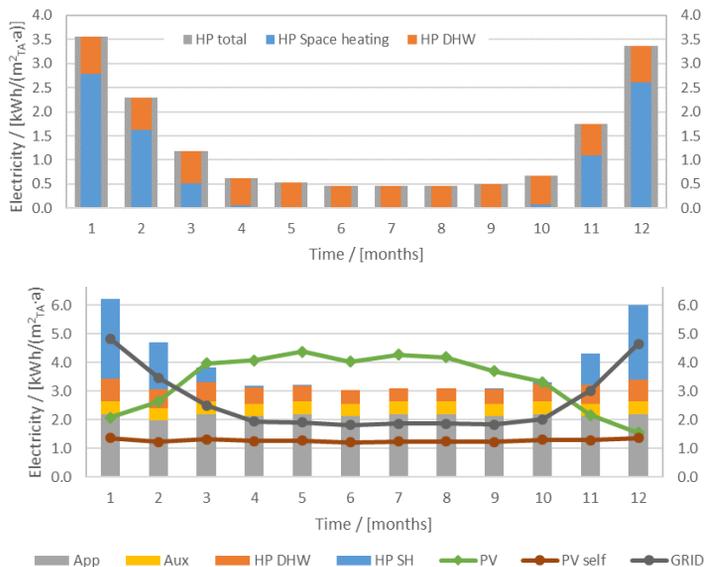
Short description

- PHPP (v 9.6a English)
- PHPP (v 9.6b German)

PHPP is a Design Tool for Passive Houses and renovations with Passive House components. PHPP accurately predicts the energy consumption of a building on monthly basis and includes algorithms for HVAC such as heat pumps systems and RE (ST, PV). A new worksheet is developed to calculate the PV self consumption per month having as basis the PHPP. In addition an algorithm was developed to calculate the monthly electricity consumption of a heat pump having as input the annual electricity consumption from PHPP 'HP' sheet.

How to install it?

To run the simulation, a licensed version of PHPP and Microsoft Office (Excel) are required. More information can be found in www.passivehouse.com.



How is the model structured?

PHPP uses monthly Energy Balance (EN 13790) with a detailed description of the building envelope including thermal bridges, ventilation, DHW incl. distribution etc. and also includes the prediction of the performance of air or ground coupled heat pumps using an improved bin method. It includes an algorithm to predict use of solar thermal energy. In addition, it calculates the electricity produced by a PV system.

The annual electricity consumption of the heat pump is distributed into the months based on the Carnot method in a post-processing step. This is performed separately, once for the use of heat pump for space heating and once for domestic hot water preparation. Furthermore, the use of a solar thermal system in combination with the heat pump is possible in PHPP and thus, in the new sheet.

How to run and modify the model?

To run the calculation the following steps have to be fulfilled:

- Open the PHPP file, which should be filled, especially the sheets:
 - 'PV',
 - 'Electricity',
 - 'Aux Electricity' and
 - 'HP'.
- In the developed sheet:
 - the path in which the PHPP file is located should be inserted as well as the filename of the PHPP
 - choose the language of PHPP. The available ones in the current version are English and German.
 - Insert the PV self consumption factor: Typically 0.4 without battery, and between 0.45 and 0.55 with battery



<https://designph.org/>

Strengths

- PHPP and PH Design are used worldwide
- Design PH allows 3D import
- PHPP includes both Passive and HVAC solutions
- PHPP includes also the calculation of Primary energy demand and carbon emissions
- With the extension, a calculation of the monthly electricity of the heat pump as well as the approximate prediction of PV self-consumption are possible
- The Supply Cover Factor (SCF) and Load Cover Factor (LCF) can be approximated both in monthly and annual resolution

