APMBuild Ltd

PHPP Explained in Plain English

What it is, why it matters, what to expect

Free technical guide from APMBuild Ltd — passive house specialists

PHPP stands for Passive House Planning Package. It is the energy calculation software developed by the Passive House Institute (PHI) in Germany — the global standard for modelling building energy performance before construction begins.

Think of PHPP as a detailed energy model of your home. It calculates exactly how much heat your building will lose through every element — walls, roof, floor, windows, doors, thermal bridges and ventilation — and works out how much energy will be needed to keep it comfortable.

The output tells you: what U-values you need to achieve, whether your project can reach EnerPHit or Passive House standard, and what the annual heating demand will be once the work is complete.

WITHOUT PHPP, A DEEP RETROFIT IS ESSENTIALLY A GUESS:

→ You install external insulation — but did you specify the right thickness?

→ You fit triple glazing — but did you account for the thermal bridge at the frame?

→ You install MVHR — but is it correctly sized for the airtight building?

PHPP answers these questions before a single brick is laid. It identifies problems on paper — where they cost nothing to fix — rather than on site, where corrections are expensive and sometimes impossible.

For EnerPHit certification, a full PHPP model is required. For projects not seeking certification, it remains the most reliable way to ensure the work achieves its intended performance.

APMBUILD PROVIDES TWO TIERS OF SERVICE:

Service	What's Included	Best For
Initial Pre-Assessment	Heat loss overview, EnerPHit feasibility check, EWI impact plan	Homeowners at the early stage, unsure if it's worth pursuing
Full Certified PHPP Model	Complete energy model, full U-value schedule, thermal bridges, airtightness, MVHR sizing	Architects, developers and clients seeking EnerPHit or

Both services are available UK-wide as a remote service. The initial pre-assessment requires basic property information and existing drawings if available.

Key Terms Explained

U-value

A measure of how quickly heat passes through a building element (wall, roof, floor, window). Expressed in W/m²K — the lower the number, the better the insulation. EnerPHit typically requires U-values of 0.12–0.15 W/m²K for opaque elements and 0.80 W/m²K or better for windows.

Airtightness (ACH@50Pa)

A measure of uncontrolled air leakage through the building fabric, tested at 50 Pascals of pressure. Expressed as air changes per hour (ACH). EnerPHit requires ≤1.0 ACH@50Pa — roughly ten times more airtight than standard UK building regulations.

Thermal bridge

A point or line in the building envelope where heat escapes more quickly than through the surrounding insulation. Common examples: wall-floor junctions, window reveals, structural penetrations. PHPP quantifies these losses and the model shows how to mitigate them.

MVHR

Mechanical Ventilation with Heat Recovery. A system that extracts stale air from wet rooms and kitchen, recovers the heat, and supplies fresh air to living rooms and bedrooms — typically recovering 75–90% of the heat that would otherwise be lost. Essential in airtight passive house buildings.

Primary energy demand

The total energy consumed by the building including heating, hot water, auxiliary electricity and appliances — expressed in kWh/m²/year. Passive House standard requires ≤120 kWh/m²/year. EnerPHit applies similar logic to existing buildings.

What APMBuild Provides

APMBuild provides complete PHPP assessments — from initial pre-assessment through to full certified models. We are the only contractor in West Midlands and Wales offering PHPP assessment and full passive house build execution under one roof.

Most consultants offer PHPP but don't build. Most builders build but don't model. APMBuild does both — which means the model informs the specification, and the build delivers the model's predicted performance.

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