Scottish Government: Passivhaus Equivalent Workshops

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Built Environment — Smarter Transformation

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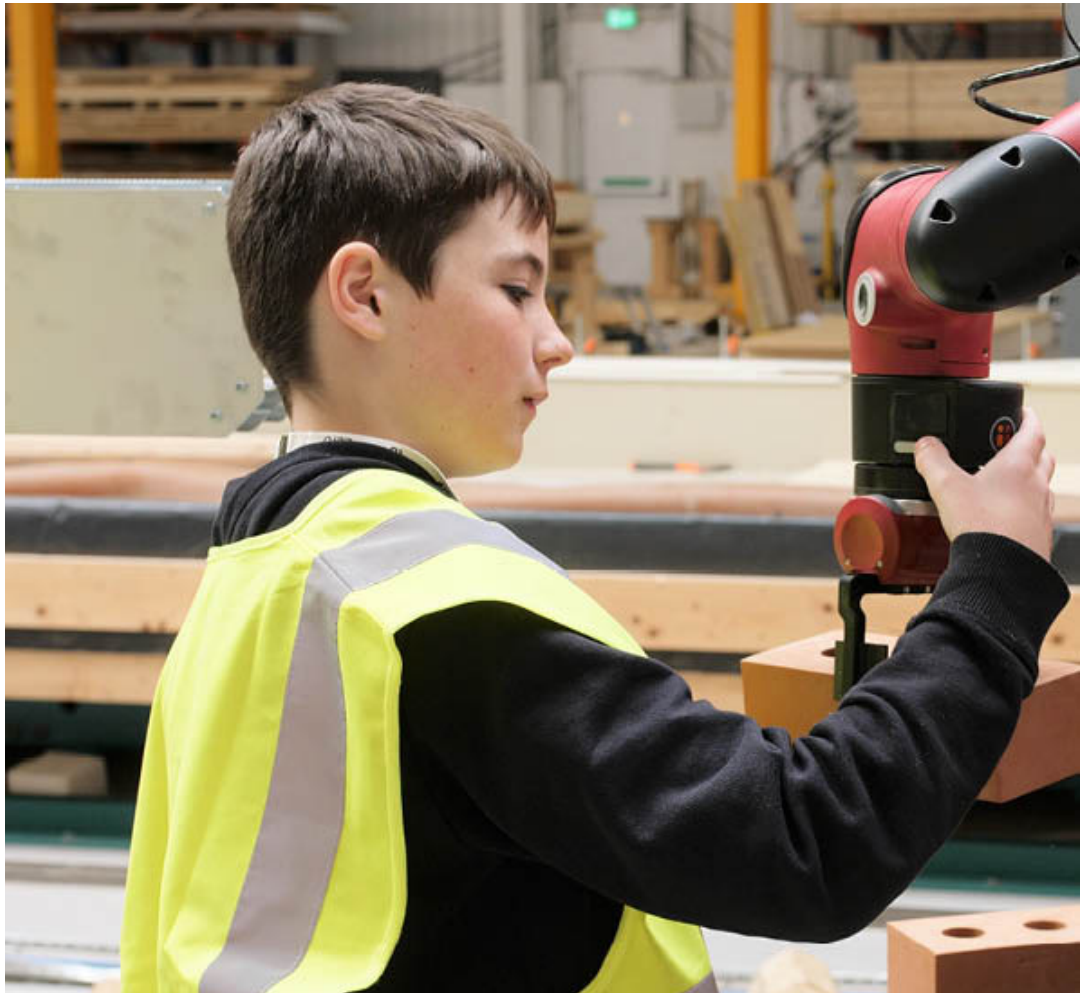


- 25 July 2023 – Form and Orientation
- 28 September 2023 – Space Heating Demand
- 12 October 2023 – Airtightness
- 24 October 2023 – Total Energy Use / Energy use Intensity
- 13 November 2023 – Calculation Methodologies
- 05 December 2023 – Ventilation and Overheating
- 16 January 2024 – Quality Assurance, Compliance and Certification
- 27 November Wider engagement workshop

01

Space Heating Demand

Space Heating Demand - General comments

- The use of a notional building in the Standard Assessment Procedure (SAP) is considered logical due to the standardized house types used by developers. However, there's a suggestion that SAP should incorporate some elements from the Passive House Planning Package (PHPP) to enhance its effectiveness.
- SAP is widely used in the sector, and moving away from it could have disastrous consequences. However, current performance measurement via SAP makes data comparisons difficult.
- Many developers advocate for a fabric-led approach to compliance, focusing on building envelope performance, which aligns with data from Energy Performance Certificates (EPCs).
- Anecdotally, the 2023 standards are achieving their intended goal of significantly improving energy efficiency.
- There are issues with the ventilation strategy in social housing.
- Adopting PHPP could greatly benefit the move to Passivhaus Scottish Equivalent standards, especially considering consumer interest in energy bills over generic kWh requirements. Fuel prices should be considered in assessing space heating or total energy demand.
- Abandoning the Notional Dwelling approach might increase housing construction costs in colder locations, affecting remote communities. Conversely, absolute targets could standardize energy demand and running costs across locations.
- There are specific gaps in mechanical ventilation certification, with the Republic of Ireland introducing third-party validation requirements for design and commissioning.

02

Airtightness

Airtightness - General comments

- Achieving the desired level of design air tightness in construction requires attention to key aspects throughout the design and construction process.
- In design, the absence of thermal bridging and air tightness are closely linked, necessitating a consistent approach. Early design input during the feasibility stage is crucial, and collaboration between architects, trades, and labour on site is essential.
- Detailed information are needed to facilitate implementation on site, with separate lines for ventilation, air-tightness, and structural elements. Standard details and empowerment by regulations to enforce compliance are recommended.
- Engagement with structural engineers on thermal bridging, along with simple and clear design standards, is important. Air tightness lines should be visible on drawings, and simplicity in details is encouraged.
- During construction, quality procedures, tool box talks, interim air tightness tests, and the presence of an air tightness champion are necessary. Sequencing of work must ensure the integrity of the air tightness layer, with consideration for simplified façade details.
- Improvements in junction designs and robust, easily understood detailing are essential in design. Closed panel construction can mitigate risks associated with sequencing on site, offering a solution for maintaining air tightness integrity.

03

Total energy use/energy use intensity

Total energy use/energy use intensity – General comments

- There's a call for detailed analysis on the actual operational costs of Passivhaus buildings, with concerns over the lack of substantiated data despite previous estimates by the Passivhaus Trust (PHT).
- In Passive House Planning Package (PHPP), the effectiveness of solar thermal versus photovoltaic (PV) systems depends on factors like roof space and hot water (HW) usage, with PV often preferred due to easier performance monitoring and fault detection.
- Solar thermal systems can impact summer overheating and pose challenges in monitoring and insulation. Considerations of additional costs to customers, such as increased electricity usage for Mechanical Ventilation with Heat Recovery (MVHR) systems, and potential impacts on mortgage payments are raised.
- When comparing costs, referencing the baseline, house type, and size is recommended. Furthermore, lifecycle costs, payback periods, and the financial implications of carbon reduction efforts need consideration.
- Concerns about the accuracy of Standard Assessment Procedure (SAP), data reliability and evidence are questioned, emphasising the need for robust analysis in evaluating energy efficiency measures.

04

Calculation Methodologies

Calculation Methodologies - General comments

Some key differences in assumptions between SAP and PHPP that lead to differences in calculated energy use:

1. Internal temperature profiles
2. Internal heat gains
3. Infiltration loss calculation and assumptions around user behaviour of things that affect infiltration (eg vents)
4. Ventilation rate assumptions for different ventilation systems
5. Appliance energy use
6. Heat pump efficiency

- Does having a comparison of two existing software approaches limit our ambition for what good could look like.
- 90% of industry organisations is less than 10 people, the challenge in these smaller projects is ensuring that the design is what is constructed.
- Design and compliance need to be combined; design is so important.
- SAP 11 timescale is an issue can we use SAP10 with PHPP as a supplement.

05

Ventilation + Overheating

Ventilation and Overheating - General comments

- The choice of ventilation system significantly influences airtightness performance in buildings, often driven by cost considerations, potentially leading to health concerns due to intentional induction of leakage in certain areas to accommodate cheaper ventilation solutions. The reliance on electricity for ventilation systems raises issues of reliability, particularly in affordable housing, but remote monitoring can help mitigate risks.

- There's a pressing need to prioritise air tightness and Mechanical Ventilation with Heat Recovery (MVHR) systems in new construction to avoid future challenges and costs associated with retrofitting. Despite technological advancements in other aspects of life, there's a lag in uptake within the housing sector, raising questions about barriers to adoption.

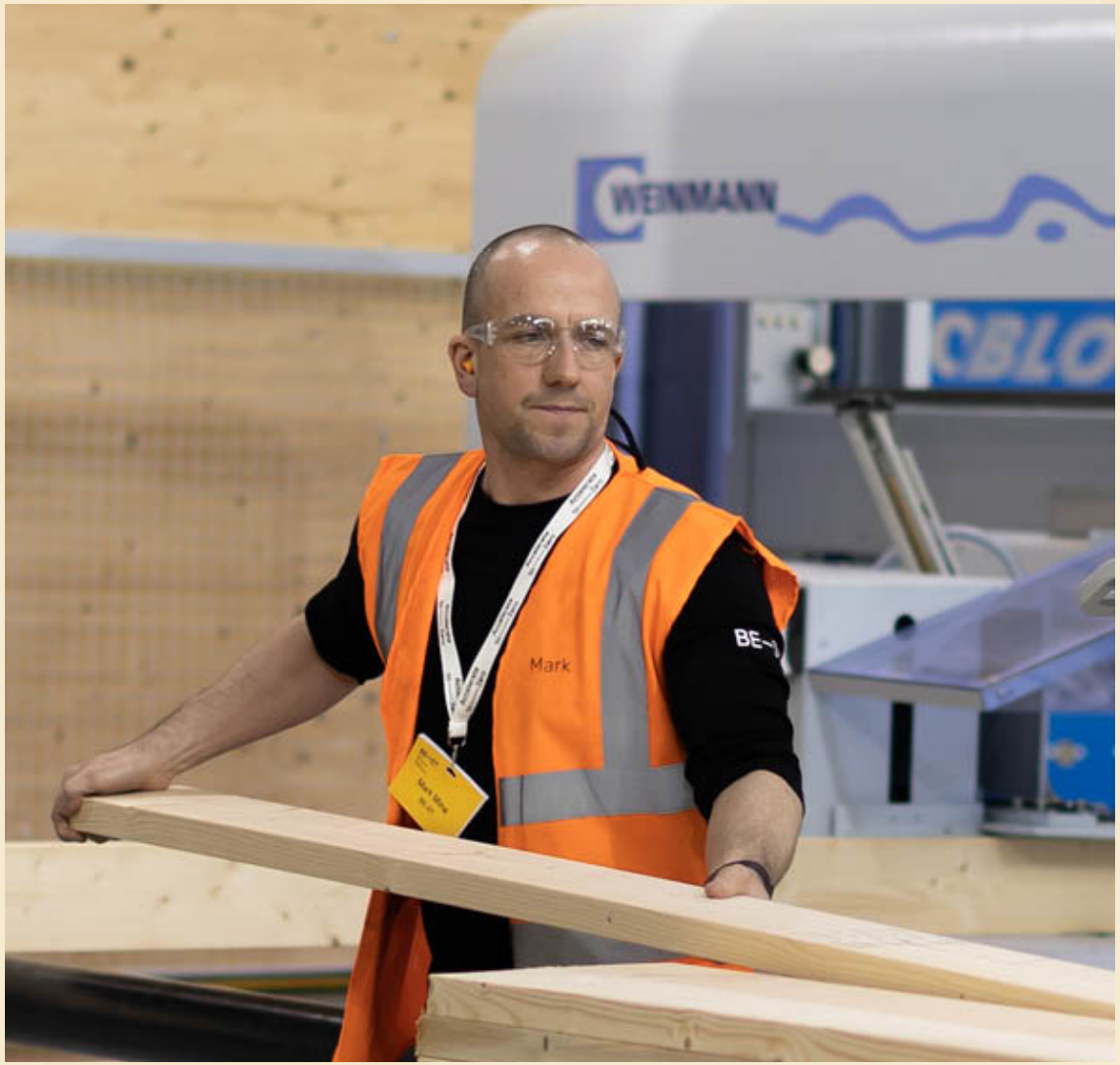
- Concerns exist regarding the potential exclusion of alternative ventilation systems under new Passivhaus (PH) equivalent regulations, highlighting the importance of regulations based on outcomes rather than prescribing specific solutions. There's a noticeable gap between industry practices and desired standards, emphasizing the need for improved quality assurance measures, particularly in commissioning ventilation systems for domestic buildings. Compliance plans should be evidence-based to ensure the attainment of desired outcomes for certification.

06

Quality Assurance, compliance and certification

General Feedback

- What do we mean by PH equivalent
- What is the role of MMC
- Don’t over complicate it
- Bottleneck risk of certification
- Don’t know what good is – what evidence is there of good practice
- Disconnect around section 6 certification
- Large scale contractor v small scale builder issues



Thank you

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