

LCH 17

Ymateb gan : Modern Masonry Alliance
Evidence from : Modern Masonry Alliance

Who we are

The Modern Masonry Alliance provides guidance on design using masonry and furnishes government and influencing organisations with the evidence of how masonry can contribute to a sustainable built environment. Founding association funders of MMA are Aircrete Product Association, Brick Development Association, Concrete Block Association and Mortar Industry Association. MMA is an affiliate of British Precast.

Summary

The MMA welcomes the Welsh Assembly's low carbon housing policy, and the SOLCER House approach, which usefully combines fabric energy efficiency with power generation and storage. To ensure homes based on the SOLCER model continue to perform long into the future, we believe Welsh policy should also emphasise the importance of ensuring longevity and robustness in new build housing. There is a need to strike a practical balance between achieving the zero carbon objective and long term housing performance, acknowledging that homes built today must last for well over a century and provide resilience to the impacts of climate change i.e. flooding and overheating.

Durability and climate change resilience

Since most of the existing housing in Wales is demonstrably durable (being made from concrete, masonry and stone), we believe there may be a presumption that longevity is not a particular concern for newly built homes. This may result in little consideration being given to the issue. This is not unreasonable for new concrete and masonry homes, but we note that the SOLCER demonstration house uses a lightweight method of construction with unproven durability, questionable flood performance and minimal thermal mass to combat overheating. We would caution against this approach, and encourage the SOLCER model to adopt locally produced, low cost masonry and concrete construction materials that offer comparable fabric energy efficiency, with the added benefit of long term durability and flood resilience; it is for good reason that all the recommended construction details provided in BS 8500 (Flood Resistant and Resilient Construction) are of concrete and masonry construction.

Masonry also offers higher levels of thermal mass; something not present in lightweight methods of construction, such as the SIPS system used to construct the SOLCER demonstration house. Thermal mass offers three distinct ways to enhance the SOLCER approach to achieving zero carbon performance:

1. Thermal mass is a very effective medium for thermal storage; an important aspect of SOLCER methodology. Masonry/concrete walls and floors can store heat produced by a heat pump, which in turn can make use of any excess power from the PV installation during the heating season. In this way, thermal mass in the building fabric helps match supply and demand in respect of power and space heating.

2. Thermal mass is very good at absorbing excess heat gains during the summer months, helping reduce the risk of overheating, which can be particularly acute in highly insulated homes that tend to trap heat. It is also worth noting that overheating may be more prevalent in a SOLCER type home as it is south facing to optimise PV performance.
3. By orientating the house towards the south to maximise solar gain, an opportunity is created to take advantage of passive solar design, which could be incorporated into the SOLCER approach. This simple technique for optimising space heating has been in existence for many hundreds of years and essentially allows solar gain from the low angle winter sun to enter the home through south facing windows. Thermal mass in the walls and floors absorb and later release this heat, reducing the overall space heating demand. It is essentially a passive version of the approach outlined in point one above, and represents good design practice.

The long term performance benefits of masonry in a zero carbon home have already been highlighted, but we would like to add a further point in respect of embodied impacts. Specifically, that no significant difference exists between masonry and timber construction in terms of their overall CO₂ impact; a key conclusion from research undertaken by the NHBC Foundation¹ that addresses a common misconception.

Locally produced and resource efficient

As you may be aware the Mineral Products Association (of which the Modern Masonry Alliance is part) has recently met with the National Assembly for Wales to discuss their approach to timber construction outlined in the Welsh Government's Natural Resources policy paper. We set out our concerns as regards the text as issued, which suggests Welsh Government policy favours timber construction over other forms. Following our meeting, we understand that this is not the intention; however, without setting the relevant paragraph in context we think it is fair to say that as stand-alone text it could be interpreted differently. For reasons already outlined in this response, we would caution against such an approach (intended or otherwise). Ultimately, we believe Welsh Government policy and our own are aiming at the same outcome for future construction in Wales i.e. it must be resource, energy and carbon efficient and fit for purpose. In this instance, we agreed that one size does not necessarily fit all, and the Mineral Products Association looks forward to continuing to work closely with the Welsh Government on policy development and implementation.

Further supporting evidence for the long term sustainability credentials of concrete/masonry are set out below, with relevant supporting references should you require more evidence-based data:

- The concrete industry has been reporting on carbon and a wide variety of other sustainability measures since 2008². The concrete and masonry industries are committed to the ongoing reduction in carbon. The CO₂ per tonne of concrete has reduced by 21.7% since 1990.
- Concrete and masonry are locally and responsibly sourced; 89% is certified to BES 6001².
- Concrete is 100% recyclable. It also absorbs CO₂ from the atmosphere over its lifecycle and continues to do this in its secondary-life as a recycled material. Ultimately, the amount of CO₂ absorbed can be reach around a third³ of the material's initial cradle-to-gate embodied CO₂.
- The concrete industry is a net user of waste, using around 107 times more waste and recovered materials than it sends to land fill².
- Concrete and masonry can achieve the highest ratings in BREEAM and deliver Passivhaus accredited homes.

- The material efficiency benefits of concrete and masonry include multi-tasking providing finish, structure, sound insulation and fire resistance⁴.
- Government statistics show that fires in timber framed buildings are more extensive than those of no special construction⁵.

Modern Masonry Alliance - Recommended actions for the National Assembly for Wales

1. Ensure Welsh housing solutions provide sufficient durability, longevity and resilience to the effects of climate change.
2. Support locally produced masonry and concrete construction materials and build on existing supply chains, which offer short lead times and support local jobs/construction skills.
3. Ensure that whole-life performance is the basis for assessing appropriate housing solutions.
4. Take advantage of the inherent benefits of concrete and masonry to help deliver the zero carbon performance of the SOLCER House approach long into the future.

References

¹ Operational and embodied carbon in new build housing - A reappraisal, NHBC Foundation, 2011

² *The Ninth Concrete Industry Sustainability Performance Report*, The Concrete Centre (on behalf of the Sustainable Concrete Forum), 2016

³ *Whole Life Carbon in Buildings*, The Concrete Centre, 2016

⁴ *Material Efficiency*, The Concrete Centre, 2016

⁵ *Analysis of fires in buildings of timber framed construction, England, 2009-10 to 2011-12*; Department for Communities and Local Government, December 2012