

Concrete guidance for the Code for Sustainable Homes

The Code for Sustainable Homes presents considerable challenges, particularly with regards to energy. To answer these challenges, The Concrete Centre has published a new guide that demonstrates how to achieve the Code's mandatory energy and CO₂ requirements with masonry and concrete



The heavyweight solutions found in the the new guidance will become even more apt with the greater recognition of thermal efficiency benefits by the new SAP procedures.

Of the nine design categories in the Code, Energy and CO₂ accounts for up to 36 of the available 100 points. This reflects the importance placed on minimising operational CO₂ emissions relative to the other included environmental impacts.

Realising these points can require significant use of renewable energy along with enhanced insulation and air leakage performance. The overall sustainability performance of a new home is assessed using a rating system of 1 to 6, with level 6 representing the highest standard that can be achieved. Assessment is carried out during the design stage and is then followed up with a further assessment at completion to verify 'as built' compliance.

The new guide, 'Energy and

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CO₂: Achieving targets with concrete and masonry', is based on research carried out by a working group comprising members of the Home Builders Federation (HBF), the Modern Masonry Alliance (MMA) and The Concrete Centre.

It found that the standard of fabric performance required at each level of the Code could be achieved with readily available systems and materials. However, ongoing improvements in the performance and cost of renewal technologies and products such as triple glazing will assist future code compliance, particularly at the higher levels.

The relatively broad scope of the Code provides a range of design options to achieve the stated number of points at each level. The new guide from The Concrete Centre examines a wide range of routes that combine different fabric and services to provide the most appropriate option for achieving the Code's mandatory energy and CO₂ requirements.

"It is clear that there is no single solution that can be used for all dwelling types," explained Guy Thompson, head of architecture and homes at The Concrete Centre. "Those that have greater exposed areas, such as detached houses, will benefit more from improved U-values. Terraced houses and flats will benefit more from the introduction of renewable energy. For most dwelling types, level 3 can be achieved without renewables and in all cases level 4 can be reached with the addition of limited





renewables. This guide focuses on these issues and more in the context of masonry and concrete construction and provides the answers.”

The ability of masonry and concrete construction to provide solutions for climate change will be further enhanced by the development of new SAP procedures which are likely to take more account of the effects of thermal mass in summer and winter. At present, SAP assumes a fixed level of thermal mass for the winter heating calculation. This can result in an overestimation of the fuel required in medium to heavyweight dwellings with a southern orientation. Thus the contribution that thermal mass can make to passive solar design is not fully recognised. Until recently, this was of relatively little importance but the move towards a much higher standard of fabric performance has made the issue more significant.

From a summertime perspective, the current SAP overheating check takes a limited account of thermal mass and anticipated rising summertime temperatures, with an associated maximum reduction in the peak internal temperature of just 10°C. In many cases the reduction associated with thermal mass will be higher and may reach as much as 6°C in some heavyweight dwellings.

“The extent to which these issues are addressed will strongly determine the ability of SAP to more accurately account for passive heating and cooling in buildings. This will have important implications for the economic design of buildings,” said Thompson.

Copies of ‘Energy and CO₂: Achieving targets with concrete and masonry’ can be downloaded free of charge from The Concrete Centre’s website – visit www.concretecentre.com/publications.

