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## UPDATE TO MCRMA/EPIC TECHNICAL PAPER NO 17

The current version of National Calculation Methodology for determining the CO<sub>2</sub> emissions using BRE iSBEM method has been updated to v2.0.c. The key changes are identified in the BRE iSBEM – User Guide – dated 18th May 2007. The principal changes which alter the guidance given in *Technical Paper 17 Design guide for metal roofing and cladding to comply with the energy requirements of UK Building Regulations (2006)* can be summarised as follows:

### Thermal

Section 2 insulation – U values  
Section 3 thermal mass Cm value

The iSBEM default value for thermal mass of metal roof and wall cladding systems is now set as 7.0 kJ/m<sup>2</sup>K, which removes the need to make corrections as previously recommended.

Section 4 thermal bridging  $\Psi$  values  
Section 8 junction details

When a flat roof (less than 20° pitch) is entered a warning message now appears stating – *this roof may need additional thermal bridges due to valley gutters.*

A default  $\Psi$  value = 1.50 W/mK is given in BRE Information Paper 01/06 for the generic valley gutters, Technical Paper No 17 gives  $\Psi$  value = 1.95 W/m.K for built-up metal system detail No 9 and metal panel system detail No 19. These are large  $\Psi$  values which will cause an increase in CO<sub>2</sub> emissions compared with the Notional Building which has no allowance for valley gutters. It is important therefore that designers select a valley gutter system with a good  $\Psi$  value which may be as low

as 0.31 W/mK. The  $\Psi$  value used should be calculated by finite element analysis in accordance with the method given in Appendix B of Technical Paper No 17 and may need to be justified to the Building Control body. Members of MCRMA and EPIC can provide guidance on suitable valley gutter systems.

## **Air Leakage**

Section 11 case study; portal frame metal clad building

Reducing the design/measured air permeability from the limit of 10 m<sup>3</sup>/(m<sup>2</sup>h) will reduce the iSBEM calculated CO<sub>2</sub> emissions by a significant amount dependant on the type of building. On the example portal frame building reducing air permeability from 10 to 7.5 m<sup>3</sup>/(m<sup>2</sup>h) reduces CO<sub>2</sub> emissions by 5%.

The next revision of NCM and BRE iSBEM is scheduled for October 2007. Updates to Technical Paper No 17 will be available on [www.mcrma.co.uk](http://www.mcrma.co.uk) and [www.epic.uk.com](http://www.epic.uk.com)

## **Liability**

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