

Developments on the path to zero carbon buildings



Looking forward to 2016 and beyond, the aspiration for what are termed 'zero carbon buildings' will require levels of heat loss around half to one third of those currently permitted. This is placing greater demands on the performance of the building fabric and the insulation products that are used.

The challenging CO₂ emission targets for buildings are driving development of new and improved insulation materials. This has generated interest in the transfer of vacuum insulation technology from the refrigeration and logistics sectors, where it is used in packaging, vehicles, and appliances such as freezers.

With a thermal conductivity around 1/5th to 1/6th of that for glass wool and polystyrene, vacuum insulation panels in construction could greatly reduce the thickness of external walls, which must otherwise increase to accommodate ever greater amounts of conventional insulation. However, bringing the technology to the construction sector is not without its challenges, which will be among the topics explored at the 2009 International Vacuum Insulation Symposium. More details of this event are on page 3 opposite. An important milestone on the path to zero carbon will be the 2010 edition of Part L of the Building Regulations which, along with a requirement for higher standards of insulation and airtightness, will

also take fuller account of thermal mass. This is in response to the greater influence of thermal mass on energy efficiency as we move



Sample of a 6mm vacuum insulated panel (VIP), which is equivalent to approximately 80mm of glass fibre insulation.

towards very low energy design. It is also an issue that is reflected in changes to the Energy Performance of Buildings Directive.

Proposed changes to the Directive will require that thermal capacity provided by the building fabric is accounted for in national calculation methodologies, such as the SAP (standard assessment procedure) tool used in the UK to check Part L compliance of new dwellings. Alongside this, the Concrete Centre has published a short guide that introduces the subject of thermal mass, explaining what it is and how it can be used to enhance year-round thermal performance. Included in the guide are straightforward explanations of related topics such as admittance, decrement and passive solar design. This can be downloaded from the Concrete Centre website (www.concretecentre.com/publications).

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