

Concrete Competes on Thermal Performance

The European Union Directive on the Energy Performance of Buildings comes into force in Member States in 2006. This Directive, which will have a fundamental effect on Building Design well into the future is aimed at improving energy efficiency in buildings, which accounts for 40% of energy consumption in the EU.

The Directive attempts to move the focus in improving energy efficiency in buildings from simply improving insulation thickness or performance to a much broader menu - thermal properties of the building shell, air tightness, efficiency of heating and cooling systems, thermal capacity of building materials and overall comfort levels in use.

The Directive will lead to the Energy Certification of Buildings based on rigorous evaluation of energy performance through methodologies established at national level. It requires Member State Governments to lay down minimum performance requirements that must be met by all new buildings and by existing buildings over a certain size. Regular inspections of boilers and air conditioning systems will also be required.

The Cement and Concrete Industry recognised at a European level the strategic

importance of this Directive for concrete construction throughout Europe when the Directive was published in early 2003.

The three relevant European Associations - CEMBUREAU (Cement), ERMCO (Ready-mixed Concrete) and BIBM (Precast Concrete) - set up a Project Group in 2003 to evaluate and respond to the opportunities presented by the EU Directive.

The Project Group was chaired from its inception in 2003 to early 2005 by Colm Bannon of Irish Cement, who is a Member of the ICF Concrete Development Group.

The Project Group immediately identified that the new legislation offered a clear opportunity for the Cement and Concrete industry to promote the advantages of the thermal mass of concrete and concrete products.

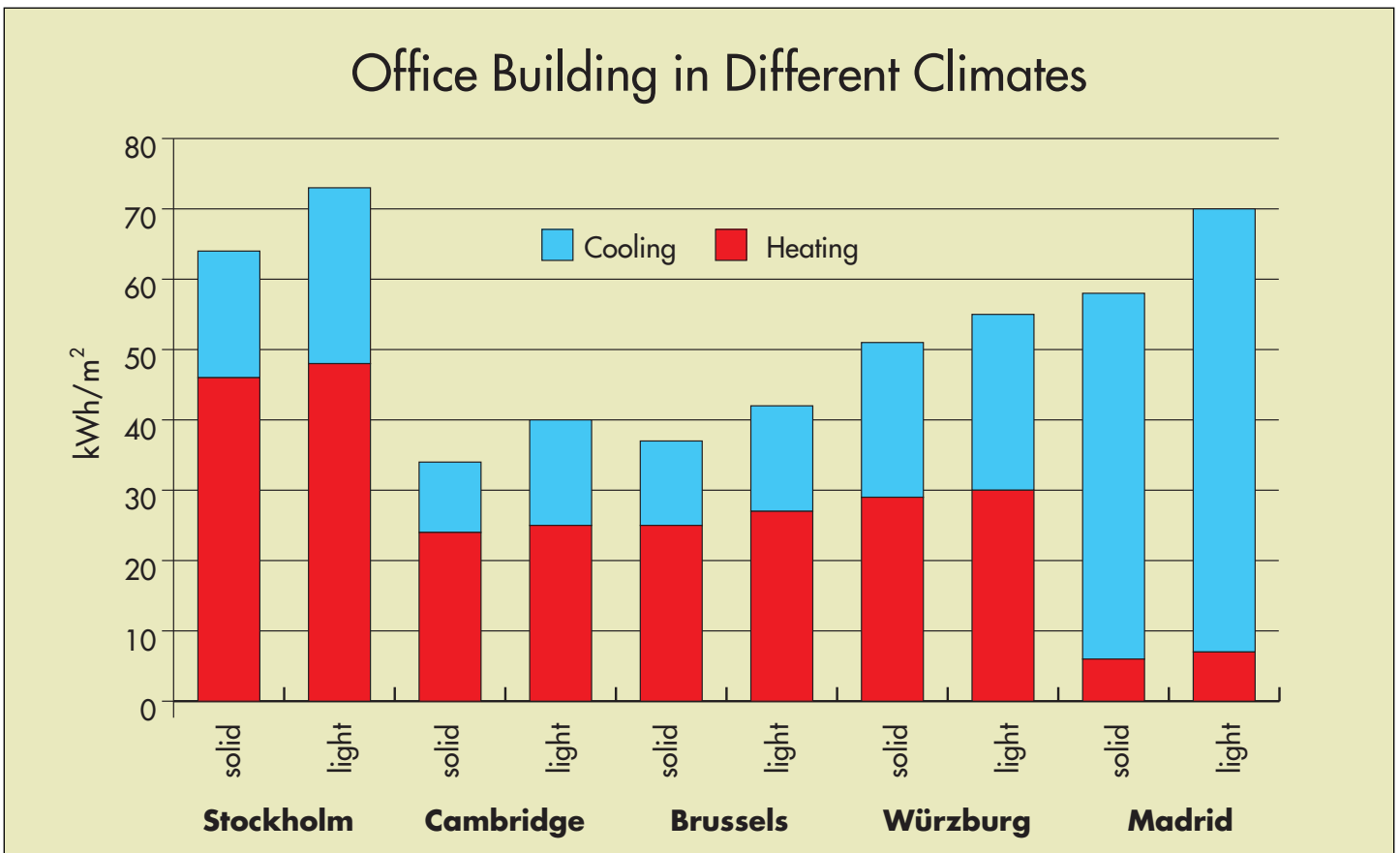
Dynamic modelling tools were identified and used to evaluate the performance of

heavyweight and lightweight construction in residential and commercial buildings in climates from Sweden to Spain and from Germany to Ireland.

Preliminary results were published at the 18th BIBM International Congress in May 2005, in a paper by Mats Oberg of Cementa AB, Sweden, who now chairs the Project Group, and Peter Lieblang of BDZ, Germany.

The overall conclusions from the initial modelling work showed that for residential construction across Europe 2-8% less energy was required by heavyweight construction. For commercial buildings the difference was greater.

Some of the results from modelling the energy performance of an office building are shown in the accompanying chart. Throughout Europe, once thermal mass is included in the evaluation tool, concrete has been shown to have a clear advantage.



The initial work was carried out on a notional structure placed in the different climates. Further work was then undertaken using dynamic modelling on housing utilising typical heavyweight and lightweight construction technologies currently employed in each country.

The results of the modelling on a modern semi-detached house in the U.K. and Ireland are shown in the accompanying chart.

The overall conclusion, despite claims to the contrary, is that concrete construction has nothing to fear from the introduction of the Energy Performance of Buildings Directive.

A detailed, peer reviewed, Report is being prepared by the Project Group and will be published in 2006. In addition, a Portfolio of Low Energy Buildings constructed in concrete throughout Europe is being prepared by the Project Group and will also be available in 2006.

The work of this Group, drawn from the cement and concrete industry across Europe, has clearly demonstrated the

benefits of working together on product and market issues.

Further information is available from the

Technical Marketing Department of Irish Cement Limited (Contact: Brendan Lynch, Technical Advisory Manager).

