



INTERNATIONAL

INVITED SESSION SUMMARY

Title of Session:

Long Term Performance of Super Insulation Materials in Building Components & Systems

Name, Title and Affiliation of Chair:

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Centre Scientifique et Technique du Bâtiment

Sustainable Building technologies: low energy architectures, energy efficient buildings, highly-efficient insulation, novel sustainable building materials and techniques, passive heating and cooling.

Details of Session (including aim and scope):

In the Building Sector, the potential of energy saving has been estimated to be close to the energy consumption in the transport sector and the current challenge is to make this potential a reality. The big challenge is the renovation of existing buildings as these represent such a high proportion of energy consumption and they will be with us for many decades to come. A step beyond the current thermal performance of building envelope is essential to realize the world wide intended energy reduction in buildings. For example, in Europe, it appears that the optimum U-values lie between 0.15 W/m².K to 0.3 W/m².K, with an average value close to 0.2 W/m².K. Using traditional insulating materials such as mineral wool or cellular foams, it means a thickness from 15 to 20 cm. For retrofitting and even for new buildings in cities, the thickness of internal or external insulation layers becomes a major issue of concern. For systems (DHW or RF) the reduction of thickness is essential. Therefore, there is a growing interest in the so-called super-insulating materials (SIM), such as VIP (Vacuum Insulation Panel) or APM (Advanced Porous Materials).

The aim of this session will be to present scientific issues dealing with SIM such as :

- Performance : Thermal conductivity, thermal bridges
- Durability : ageing mechanisms & service life planning
- Sustainability (LCA, LCC, Embodied Energy)

in order to improve knowledge and confidence of the supply chain regarding SIM, thanks to sustainability analysis and to foster a wider public acceptance of SIM in the future.

The scope of this session will cover two types of SIM:

- Vacuum Insulation Panel
- Advanced-Porous Materials (APM), such as Porous Silica & Aerogel

Case studies at the building scale will be also briefly presented.

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