Aerogel applications in the building sector

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Abstract

Silica aerogel insulation materials provide excellent thermal insulation combined with very good building physics properties (diffusion openness, fire protection, hydrophobicity). However, the costs of the available aerogel products are usually several times higher than conventional insulation materials for the same insulation performance. This particular set of characteristics defines a niche in the building sector where aerogel materials can provide outstanding performance or create financial opportunities.

We will give an overview on the common aerogel applications, i.e. retrofits, architectural details, new buildings and upward extensions. A brief analysis of the contexts where aerogel insulation can create economic benefit will be presented. New technical solutions for the implementation of aerogel insulation will be highlighted, in particular prefabricated aerogel wood elements.

Even though silica aerogels are a niche product and will not be cost competitive with conventional insulation materials due to higher raw material cost and more complex production processes, there is still significant potential for the use of these insulation materials in buildings that is not taken advantage of.

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