



EUROPEAN
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EeB.NMP.2010-1 New nanotechnology-based high performance insulation systems for energy efficiency

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Rationale

- **Insulating materials** keep the temperature constant in an enclosed space such as a house, either warmer or colder than the surroundings, and in doing so can **protect the environment** through the reduction of greenhouse gases.
- **Nanotechnology** offers high potential for **enhanced insulation** through thinner coatings or fillings.



Research Objectives

- Development of **nanotechnology based insulation systems** for enhanced thermal and improved mechanical properties **while reducing overall costs.**
- **Economic feasibility** important
 - New construction
 - Renovation of existing installations



Non-binding examples

- Aerogels/aerogels composites;
- Nanofoams or thin nanostructured insulators based on thermally resistant (composite) nanoparticles which can be applied directly to a surface as a film, spray or paint;
- Insulating effect could be combined with other functionalities, for example with photocromic, thermocromic, electrochromic for windows or flame retardant effects, self-cleaning, biocide or humidity control properties, for walls and roofs...



Other important considerations

- The **safety** for the **full product life cycle** (production, use, disposal/recycling);
- **Economic performance** of the proposed solutions should be demonstrated by **service-life costing analysis**;
- Active participation of **industrial partners** encouraged;
- **Demonstration activities**, including **pilot implementations** in industrial settings expected.



Expected Impact

- Reduce the cost of nanotechnology-based insulation systems and make their wide-scale commercial application feasible;
- Reduce the heat losses and gains through the building envelope for reduced energy consumption and increased indoor comfort;
- For windows which are the weakest part on the energy efficiency performance, a reduction in the U/value by more than 35% is expected compared with conventional ones.



Contact point for the topic

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