Info Days on the Research PPPs

Energy-efficient Buildings. First success stories

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General Status of the Project

- Total budget – 3,520,642€
- Total funding – 2,399,652€
- 8 official partners from 6 EU countries
- Starting Date: June 2010.
- Project Lifetime: 36 months
1. Organic form-stable phase change materials (PCM) with **improved conductivity incorporating nano particles**.

2. Nanoporous material in which selected organic/inorganic PCMs will be embedded.

3. PCM microcapsules with improved thermal conductivity with nanoparticles, embedded in polymer insulating foams.
The **project will focus** on:

1. Development and manufacturing of nanotechnology based PCMs
2. Integration into smart insulation materials with enhanced thermal and mechanical properties.
3. Overall production costs reduction by making wide scale commercial applications feasible by pilot plant production implementation at real scale.
4. The renovation of existing social housing apartment in Lithuania will be implemented with the new insulation materials.
**NANOPCM**: New Advanced Insulation Phase Change Materials

Carbon nanofibers (CNFs)

Microcapsules containing PCMs and CNFs

Atomic Force Microscopy (AFM)
Differential Scanning Calorimeter (DSC) confirms that the presence of CNFs do not have any affect on the amount of PCM microencapsulated (Figure a). Nevertheless, the thermal conductivity of the microcapsules was enhanced with the incorporation of the CNFs (figure b).
The higher the microcapsules content, the lower the average cell size. However, some large holes appear probably due to the presence of agglomerated particles break the struts.

Mechanical properties (reduced compression strength and modulus)
EeB.NMP.2010-1 New nanotechnology-based high performance insulation systems for energy efficiency

Technical content/scope: Insulating materials are used to 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 allowing thinner coatings or fillings to prevent heat loss or gain which would not be possible with conventional materials. The research shall focus on development of nanotechnology based insulation systems for enhanced thermal and improved mechanical properties while reducing overall costs making wide-scale commercial application feasible, including the renovation of existing installations. Examples of materials systems for achieving this are aerogels/aerogel composites and 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. A further research objective is to combine the insulating effect with other functionalities, for example with photochromic, thermochromic, electrochromic for windows or flame retardant effects, self-cleaning, biocide or humidity control properties, for walls and roofs. The safety of proposed solution(s) must be ensured for the full product life cycle (production, use, disposal/recycling). Economic performance of the proposed solutions should be demonstrated by service-life costing analysis.

In order to ensure industrial relevance and impact of the research effort, the active participation of industrial partners represents an added value to the activities and this will be reflected in the evaluation.

The projects are expected to cover demonstration activities, including pilot implementations in industrial settings, and this will be reflected in the evaluation.
**EeB.NMP.2010-1:** New nanotechnology based high performance insulation systems for energy efficiency.

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<th>ACRONYM</th>
<th>TECHNOLOGY</th>
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<td>NANOPCM</td>
<td>PCM+nanoparticles, Nanoporous polimers, PU+PCM</td>
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<td>NANOINSULATE</td>
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<td>COOL COVERINS</td>
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Considerations

1.- Read topic and scope carefully, and then, read it again.

2.- Try to give your project idea an overview approach

3.- Check other ongoing proposals and image what other technologies are being offered.

4.- Build your project consortium with experts from industry and academics. Don’t forget about SME’s.

5.- Try to answer majority points from call and topic.

6.- Good luck!!
Thank you
for your attention

www.nanopcm.eu