The AMANAC-CSA aims to support and encourage long-lasting collaboration within all the **"Advanced Materials and Nanotechnology" projects,** to maximize the impact on European Industry and Society.

The **AMANAC** cluster projects are grouped into six thematic areas:

- **High Performance Insulation**
- **Embodied Energy**
- **Smart Windows**
- **Lightweight Components**
- **Indoor Environment Quality**
- **Pilot Production**

DISCOVER AMANAC
http://www.amanac.eu/

COORDINATOR CONTACT
NATIONAL TECHNICAL UNIVERSITY OF ATHENS (NTUA)
Prof. Maria Founti
T: +30-210-772-3605
E: mfou@central.ntua.gr
Location: SCHOOL OF MECHANICAL ENGINEERING, HEROON POLYTECHNIOU 9-15780 ATHENS, GREECE

http://www.hipin.eu

http://www.aerocoins.eu

http://www.vip4all.com

http://homeskin.net

ADVANCED MATERIAL & NANOTECHNOLOGY CLUSTER

HIGH PERFORMANCE INSULATION

HIPIN- *High Performance Insulation based on Nanostructure Encapsulation of Air*

Objective: Development of a high-silica content robust **aerogel** to incorporate it into new affordable building materials such as paints, plasters, and panel systems to improve thermal efficiency in new and retrofitting buildings.

Key Results*:* Five key exploitation results can be highlighted for the project, viz. a high silica content precursor which can be used to make robust aerogel, a cost-effective route for synthesis of hydrophilic and hydrophobic aerogel, and three building products which incorporate the aerogel and demonstrate improved thermal performance - thermal paint, thermal plaster, and panels. The insulation benefits and performance of the 3-building products were established via the demonstrators in the project. Long-term durability (for the plaster) and the cost of the aerogel remain key factors that will drive commercial viability of the products. As the cost of the aerogel comes down with increasing demand, it is anticipated that the payback period for the investment will be low enough to create a market pull for these novel building insulation products, both for retrofits as well as new buildings.

AEROCOINs- *Aerogel-based composite/hybrid nanomaterials for cost effective building*

Objective: Develop new composite/hybrid **aerogel** material suitable to be handled at construction sites, to improve the thermal insulating performance of existing buildings aiming at reducing their energy demands.

Key Results:

- ♦ New strategies for the preparation of mechanically reinforced aerogel based thermally superinsulating materials.
- ♦ Developing an ambient drying process for large aerogel boards.
- ♦ Designing and fabricating a novel building component prototype based on the developed aerogel-like material, which is compatible with conventional construction installations where the envelope is part of the buildings.
- ♦ Demonstration of the thermal, structural and mechanical performance of the highly insulating component under real conditions.

VIP4ALL - *Highly Sustainable and Effective Production of Innovative Low Cost Vacuum Insulation Panels for Zero Carbon Building*

Objectives: VIP4ALL project aims to deliver to the building sector an alternative and cost-effective new **VIP product** solution, specially designed for energy efficiency goals and able to provide, at affordable price, superior thermal insulation for the major EU building renovation in progress.

Mainly by using a combination of natural, cheaper and sustainable materials for the creation of hybrid multi-level network structures, the ultimate goal is to develop new core systems that can cut up to 50% the costs of the conventional silica ones, making VIP4ALL a truly competitor in terms of price when compared with standard fiber and polymer insulation products.

Key Results: Up until now VIP4ALL trial panels have already been produced at industrial scale securing thermal conductivities around 7mW/mK, thus comparable to standard VIP solutions. Accelerated ageing tests are currently under execution, in order to attest the service life expectancy and to ensure the long-time thermal performance for this novel market solution.

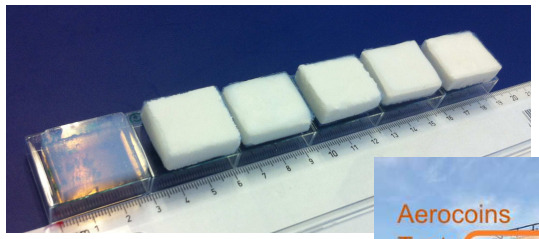
HOMESKIN- *HOMES Key INsulating material*

Objective: The HOMESKIN project aims at developing a new silica Advanced **Aerogel**-Based Composite material possessing the lowest thermal conductivity of all insulation materials found in the market. The project will allow an accelerated industrial ramp up of this high performance insulation for a worldwide expansion. Through this project, Europe has the opportunity to take the lead on super-insulation systems.

Key Results*:* The proposed solution will bring to the market new insulation technologies that do not only posses very high thermal insulation performance but also are thinner, lighter, non inflammable, breathable and with lower CO_2 and VOC emissions. The new material developed can be applied to new building as well as for old buildings retrofit applications. Thanks to the use of mineral materials, our super-insulation products will be more sustainable and durable than other insulation.

HIPIN

AEROCOINs



VIP4ALL

HOMESKIN