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acciona

graphenano "nanotechnologies"

SEPAREX Supercritical Fluid Technology

instituto idea nanociencia

Fraunhofer IFAM-IVV

nanto cleantech SINGULARITY MATERIALS

EMPA Materials Science & Technology

D'APPOLONIA consulting, design, operation & maintenance engineering

Leibniz-Institut für Polymerforschung Dresden e. V.

Cambridge Nanomaterials Technology Ltd

Stam

INEA

swerea|SICOMP

netcomposites

PURINOVA Polyurethane Innovation

ecnp

cea

# NANO leap

## Nanocomposite for building constructions and civil infrastructures:

## European network pilot production line to promote industrial application cases.


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# ABSTRACT

NANOLEAP project aims at the development of a coordinated network of specialized pilot lines for the production of nanocomposite based products for different civil infrastructure and building applications.

The goal of this network is to support the research activities of European SMEs in the Construction sector in nanocomposite products enabling the progress of the product to next steps of technology deployment such as installation of industrial lines and enter in the commercialization stage.

For the creation of the network, ten pilot plants dealing with the most promising applications of polymeric nanocomposites in the construction and engineering sector have been selected. This project will support these pilot lines for the scaling up and production of these nanocomposite based products in order to facilitate their further adoption by the entire construction chain.


# PROJECT DESCRIPTION

NANOLEAP project brings together a European Network of pilot production facilities focused on scaling up nanocomposite synthesis and processing methods. This Network of pilot plants will be available to companies active across the European Construction value chain and for new players who are considering entering the market. NANOLEAP project will effectively support manufacturing SMEs in the implementation of research results for the development of innovative products and processes.

Ten pilot plants dealing with the most promising applications of polymeric nanocomposites in the construction and engineering sector have been selected:

- Coated nanoparticles with improved compatibility with the matrix providing a wide range of functionalities and leading to high quality products and important saves of energy when processed;
- Antiweathering and anticorrosion nanocomposite coatings for the protection of structures exposed to aggressive environments such as wind turbines, offshore, marine infrastructure;
- Multifunctional polymeric nanocomposites providing environmental resistance (antimicrobial, UV protection) and smart applications to traditional construction materials such as concrete and coatings including self-cleaning, hydrophobicity, early warning crack and water leak alarm;
- Prefab lightweight elements such as aerogels mechanically reinforced with nanoparticles for high thermal insulation applications in building.

The following scientific and technical objectives will be pursued:

1. Development of an Ecosystem for the Pilot network set up and governance
2. Integration of novel technology and tailored processing in existing pilot production lines to enable the use of nanofillers in Industrial Manufacturing process in a sustainable and cost-effective way.
3. Integration of quality control and process verification to increase the level of robustness and repeatability of the industrial processes aimed at nanocomposite production.
4. To develop a Business Plan for enabling Open pilot lines access.
5. To ensure the success of the Nanoleap Network during and after the project through the Constitution of a Cluster Expert Group