Innovative prefabricated components including different Waste construction materials reducing building Energy and minimising Environmental impacts

PARTNERS

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Scope

The main aim of InnoWEE is the development of an optimized reuse of Construction and Demolition Waste (CDW) materials to produce high added-value prefabricated insulating and radiating panels to be used in Energy-Efficient Buildings. InnoWEE project focuses on the development, production and field tests of new high performance eco-friendly prefabricated geopolymeric panels including different CDW for insulating facades (ETICS-like, ventilated facade panels) and for indoor radiating system (monolithic panel, assembled panel) with low environmental impact, low embodied energy, low CO2 emissions and high thermal performance.

InnoWEE panels installed in demo sites

Till the end of 2018 three types of panels were installed in the following demo sites:

• Pilot House in Padua (Italy) – ETICS-like panels, ventilated façade panels;
• Old city hall of Voula in Athens (Greece) – ETICS-like panels, ventilated façade panels, fire resistant indoor wood panels;
• Don Orione residential care center in Bucharest (Romania) – ETICS-like panels.

Pilot production of InnoWEE panels

Following the most strict and advanced industrial standards, under a fully automated monitoring processes, the “Technology Upscaling Pilot Plant” (TUPP) has been designed by AMS in such technical flexibility that is capable to upscale a wide range of technologies.

Simulation models

Simulation models are being developed by TECNALIA and RED to evaluate the energy performance of InnoWEE solutions under different parameters. Thus, optimized solutions are suggested based on economic feasibility studies.

Thermal design of InnoWEE radiant panels

CNR-ITC performed the three step thermal design of InnoWEE radiant panels to obtain the best thermal performance while respecting the constraints on material thickness and piping geometry.

Energy performance simulation of InnoWEE panels

These steps were as follows:
1. Thermal characterization of materials;
2. Numerical simulations of the alternative solutions;
3. Thermal testing on specimen in laboratory.

Life cycle assessment (LCA) of the façade panels

ZAG performs life cycle inventory and impact assessment for four types of InnoWEE panels where secondary raw materials are used to study the environmental impacts related to different life cycle stages of the panels. Due to the substitution of virgin materials with secondary raw materials considered “waste” the environmental footprints tend to be lower as when using virgin materials.

InnoWEE mobile leaflet

InnoWEE mobile leaflet is available in 8 languages. To download, please scan the QR code and select the language version.

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