Project profile

Topic
New technologies and strategies for the development of pre-fabricated elements through the reuse and recycling of construction materials and structures.

Call: H2020-EEB-2016

Grant agreement no: 723825

Duration: 42 months (started Oct. 2016)

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Consortium

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Collanti Concorde
www.collanticorner.it
Cool Haven
www.coolhaven.pt
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Advantages

- Easy and fast installation (30% lighter than conventional envelope walls of the same size – expected installations of at least 15% faster during the project, and can reach 30% on product stage)
- Developed prototype will be Eurocode standard compliant and provide thermal insulation with a U value of 0.14 W/m²·K and acoustic insulation in the 55-60 dB range
- Green INSTRUCT building block contribute to on site grey and stormwater management through the integration of a vertical green wall, providing additional functionalities

Summary

The Green INSTRUCT project develops a prefabricated modular building wall panel that is superior to conventional precast reinforced concrete panels by virtue of its reduced weight, improved acoustic and thermal performance and multiple functionalities.

Strategic Objectives

- Sustainability & cost savings through CDW sourced materials and C2C approach
- Efficient, robust, eco-friendly and replicable processes
- Cost efficient products & new supply chains
- Safe and energy efficient buildings
- Comfortable, healthy and productive environment

At a glance

- Magnesium Oxide Cement
- Polyurethane Insulating Foam
- Recycled Aluminum Frame
- Geopolymer Layer
- Reinforcing fibres
- Air Gap

System Design

- Optimisation of material flow and CDW harvesting - CFD for thermal performance and volume optimisation
- Optimised weight and volume (weight 40-80kg) / Scalable material processing through extrusion
- Easy to assemble, transport, install, maintain and recycle (15-20% faster installation)
- Over 70% CDW per weight (on average 30 kg of CDW per block) - Adaptable with tunable thickness (126-286 mm) - Eurocode compliant

Green Wall

- Plants included in the panel for greywater and stormwater management
- Geopolymer Layer
- Geopolymer matrix from CDW: clay, wood, glass, bricks, gypsum and tiles
- Reinforcing fibres
- Reinforcing fibres from PVC, PET, PE and/or textiles
- Air Gap
- 30-60mm

External panel

- Aesthetics
- Biodiversity
- Good mechanical properties
- Greywater management
- Acoustic insulation

Internal panel

- Thermal comfort (U=0.14 W/m²·K)
- Seismic resistance
- Indoor air quality
- Fire protection (Class B)
- Textural quality
- Acoustic Insulation (18 to 20 Rayl/cm²)