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 aggreement no: 723825

Duration: 42 months (started Oct. 2016)

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Consortium

Brunel University
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IK4-CIDETEC
www.cidetec.es

LEITAT
www.leitat.org

National Technical University of Athens
www.ntua.gr

Center for Technology Research & Innovation
www.cetri.net

Exergy
www.exergy.uk.com

Alchemia-nova
www.alchemia-nova.net

Consorzio STRESS
www.stress-scarl.com

University of Aveiro
www.ua.pt

Artia Nano-Engineering and Consulting
www.artianano.com

NR-GIA BUDOWNICTWO
www.nrgia.eu

Collanti Concorde
www.collanticoncorde.it

Cool Haven
www.coolhaven.pt

Acciona Infraestructuras
www.acciona-infraestructuras.com

H2020-EEB-2016

Green Integrated Structural Elements for Retrofitting and New Construction of Buildings

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 723825

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.oC 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.

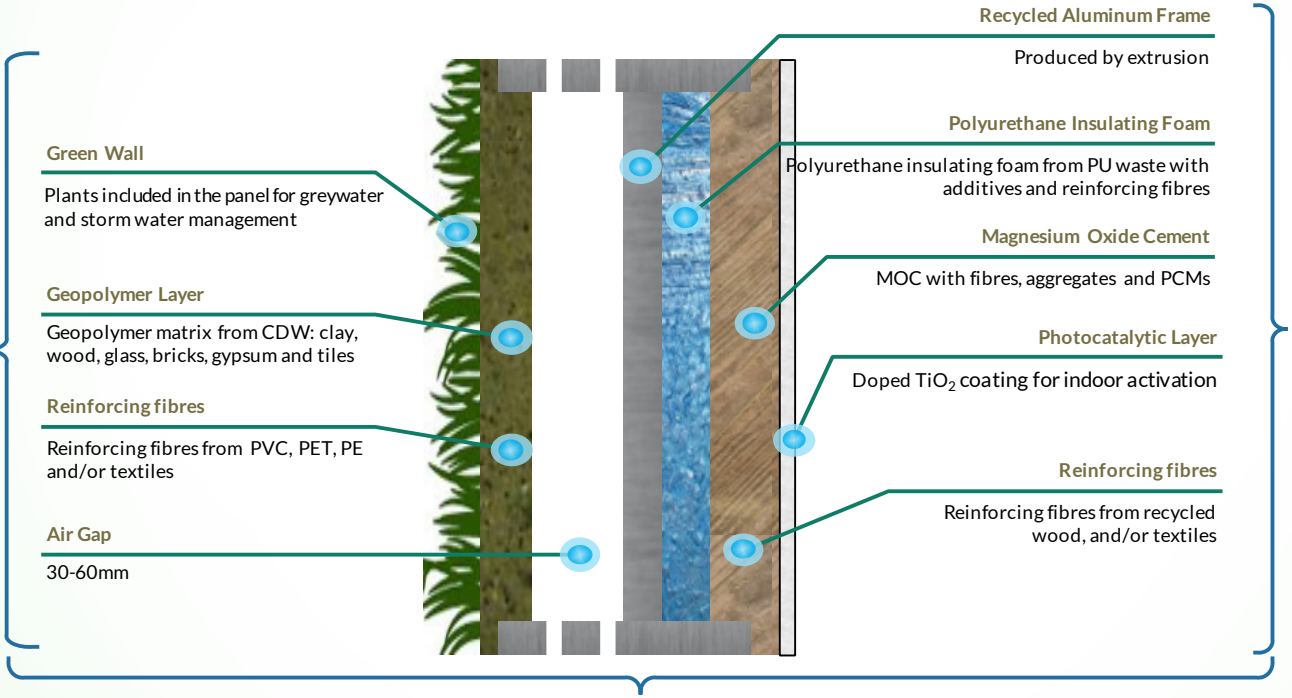
Strategic Objectives

- 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

Green INSTRUCT *At a glance*

External panel

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



Internal panel

- ✓ Thermal comfort (U=0.14 W/m²C)
- ✓ Seismic resistance
- ✓ Indoor air quality
- ✓ Fire protection (Class B)
- ✓ Textural quality
- ✓ Acoustic Insulation (18 to 20 Rayl/cm²)

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