Green Integrated Structural Elements for Retrofitting and New Construction of Buildings

Results

<table>
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<th>Project Information</th>
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<tr>
<td><strong>GREEN INSTRUCT</strong></td>
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<tr>
<td>Grant agreement ID: 723825</td>
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<td>Project website <a href="#"></a></td>
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<td><strong>Funded under</strong></td>
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<td>H2020-EU.2.1.5.2.</td>
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<td><strong>Overall budget</strong></td>
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<td>€ 4,996,626.25</td>
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<td><strong>EU contribution</strong></td>
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<td><strong>Status</strong></td>
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<td>Closed project</td>
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<td><strong>Coordinated by</strong></td>
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<tr>
<td>BRUNEL UNIVERSITY LONDON</td>
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<td>United Kingdom</td>
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Start date: 1 October 2016
End date: 30 September 2020

Deliverables

Documents, reports (9)

- Validation report on thermal and acoustic performance
  Report detailing the thermal and acoustic properties of the individual layers and assembled panel

- Structural and safety performance report
  Report detailing the structural performance of the panel as well as adherence with overall fire and safety standards

LCA, LCC, CBA, LCSA
Life Cycle Analysis with economic, social and energy considerations of the supply chain and cost-benefit analysis

**Functionality report**
Report detailing the performance of the panel in terms of aesthetics, photocatalytic activity, textural comfort and Green Wall performance

**Roadmap for ETV with Green INSTRUCT technologies**
The “Statement of Verification”, gained with the ETV process can be beneficial for further exploitation. The roadmap will be described here.

**Demonstration site preparation report**
Report detailing the required preparations for the demonstrations sites

**End user requirements**
Occupant and end user social, economic, environmental and performance related requirements Specifications on integrated and individual components

**Green INSTRUCT business plan**
Plan towards the commercialization of the Green IN-STRUCT product

**Report on additional CDWs**
Report detailing CDWs with highest technical and economic interests apart from those covered in the project

**Demonstrators, pilots, prototypes (9)**

**Extruded aluminium elements**
Extruded elements that will be assembled to produce the structural frame

**Polymer recovery report**
Report detailing the recovery process for exploitable polymers and subsequent processing into pellets

**TESTCELL demonstration report**
Report on the demonstrations conducted at the TestCell site

**Processed raw materials as precursors for synthesizing geopolymer matrix**
Processed red bricks, gypsum, glass and clay for utilization in synthesizing geopolymers. Optimized processing and formulations.

**Structural adhesives with integrated CDW**
Structural adhesives with integrated CDW (fibres, PU etc.)

SANNIO demonstration report
Report on the demonstrations conducted at the University of Sannio site

CDW recycling process
Process for recycling, transporting, distributing and storing identified valuable CDWs

5-minute Video of Green INSTRUCT Trials
A 5-minute video detailing the achievements of the project, uploaded on the website, social media and sent to TV channels

Assembled prototype panel
Green INSTRUCT prototype panel featuring all of the components

Websites, patent fillings, videos etc. (2)

Project Website
A project website will be developed and also continuously updated with project progress information.

Data management plan
The plan will describe ways to manage all research data, and metadata, during and after the project duration.

Publications

Conference proceedings (3)

Development of green building materials through alkali activation of industrial wastes and by-products.

Author(s): D. Kioupis, S. Tsivilis, G. Kakali (NTUA)
Published in: Issue 11th PanHellenic Scientific Conference of Chemical Engineering proceedings, 2017
DOI: 10.5281/zenodo.1438295

Valorization of CDWs through Geopolymerization

Author(s): D. Kioupis, A. Gaitanis, A. Skaropoulou, S. Tsivilis, G. Kakali
Published in: Issue 11th Panhellenic Scientific Conference of Chemical
Construction and Demolition Wastes as Resources for the Development of Green Building Materials

Author(s): D. Kioupis, A. Skaropoulou, S. Tsivilis, G. Kakali
DOI: 10.5281/zenodo.1438270

Peer reviewed articles (6)

The application of experimental design models in order to optimize the synthesis of geopolymers

Author(s): Dimitris Kioupis, Aggeliki Skaropoulou, Sotiris Tsivilis, Glikeria Kakali
Published in: MATEC Web of Conferences, Issue 149, 2018, Page(s) 01029, ISSN 2261-236X
DOI: 10.1051/matecconf/201814901029

Alkali leaching control of construction and demolition waste based geopolymers

Author(s): Dimitris Kioupis, Aggeliki Skaropoulou, Sotiris Tsivilis, Glikeria Kakali
Published in: MATEC Web of Conferences, Issue 149, 2018, Page(s) 01064, ISSN 2261-236X
DOI: 10.1051/matecconf/201814901064

Sustainable Calcination of Magnesium Hydroxide for Magnesium Oxychloride Cement Production

Author(s): Gediminas Kastiukas, Xiangming Zhou, Babar Neyazi, Kai Tai Wan
Published in: Journal of Materials in Civil Engineering, Issue 31/7, 2019, Page(s) 04019110, ISSN 0899-1561
DOI: 10.1061/(asce)mt.1943-5533.0002786

Environmental Assessment of Magnesium Oxychloride Cement Samples: A Case Study in Europe

Author(s): Gediminas Kastiukas, Shaoqin Ruan, Cise Unluer, Shuang Liang, Xiangming Zhou
Published in: Sustainability, Issue 11/24, 2019, Page(s) 6957, ISSN 2071-1050
DOI: 10.3390/su11246957

Development of precast geopolymer concrete via oven and microwave radiation curing with an environmental assessment

Author(s): Gediminas Kastiukas, Shaoqin Ruan, Shuang Liang, Xiangming Zhou
Published in: Journal of Cleaner Production, Issue 255, 2020, Page(s) 120290, ISSN 0959-6526
DOI: 10.1016/j.jclepro.2020.120290