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INCSEB PROJECT LAUNCHED

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The European objective of carbon neutrality by 2050 requires new constructive systems that substantially improve the energy efficiency of buildings and reduce GHG (Greenhouse Gas) emissions. Steel construction needs to respond to such a challenge, in particular for non-residential buildings, which are prioritized by the European Green Deal and represent a huge potential for energy savings.

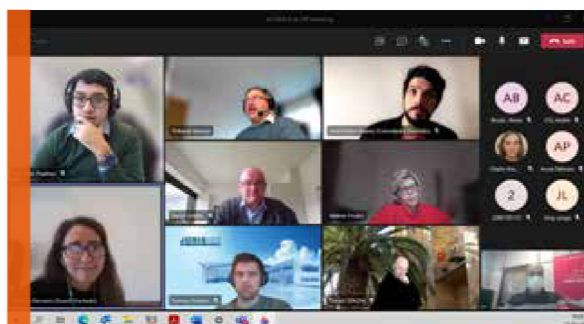
The INCSEB project, acronym for Innovative Ultra-Low Carbon Building Steel Envelope Systems, aims at developing five ultra-low carbon building steel envelope systems, thanks to the innovative use of wood fiber, a renewable and bio-sourced insulation material, achieving a high level of thermal performance while ensuring compliance with other essential requirements, such as mechanical, fire or acoustic performances.

The five innovative systems, which will be developed and selected after a careful technical and economic analysis are:

- (a) A prefabricated wall cladding sandwich panel with steel faces and wood fiber core.
- (b) A prefabricated pitched roofing sandwich panel with steel faces and wood fiber core.
- (c) An on-site assembled double skin wall cladding system with steel trays, profiles and wood fiber insulation.
- (d) An on-site assembled cassette cladding system with steel panels and framing and wood fiber insulation.
- (e) A prefabricated flat roofing sandwich panel with steel faces and wood fiber core completed on site with a mineral wool insulation and a weatherproof membrane.

The project started in September 2021 and will have a duration of 48 months.

The INCSEB project comprises a well-structured consortium and a reasonable workplan that can ensure the achievement of the expected results. The involved partners form a complementary group, where each partner has expertise in the topics being addressed, bringing proprietary know-how and offering private infrastructure and facilities, for the final implementation of the developed products.



Virtual Kick-off meeting

The French trade association, L'ENVELOPPE MÉTALLIQUE DU BÂTIMENT, will act as the coordinator of the project, as they have already participated in several R&D projects under FP7 or RFCS research framework programmes. They will also perform the life cycle analysis and techno-economical assessment of the developed products and co-ordinate the partners for the drafting of amendments to several EN standards and writing scientific publications. Moreover, they will host a technical workshop for the presentation of the investigation procedure and results obtained.

Overview:



UNIVERSITY OF COIMBRA (Portugal) will be in charge of the sensing and monitoring of the Demo Buildings for the analysis of the hygrothermal properties or on-site acoustic performances.

In addition, they will perform laboratory tests for diaphragm behaviour and airborne sound insulation and will develop an hygrothermal model for dynamic simulation.

Finally, TECNALIA (Spain) will carry out seismic, durability, thermal transmittance and environmental performance analysis (air and water permeability and wind loading) and will specially focus on the fire behaviour of the systems, regarding fire reaction, fire resistance and external fire spread characteristics.

Detail:



The INCSEB project has received financial support from the European Community's Research Fund for Coal and Steel (RFCS) under grant agreement N°101033984.

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Detail demo building

The industrial partners, MONOPANEL (France) and JORIS IDE (Belgium), will work on the definition of the systems, materials and ancillary components and will be in charge of the fabrication and delivery of all the necessary samples for the tests and the prototypes for the Demo buildings. They will also create BIM models for each system and technical documentation (design guides, assembly instructions, etc.) to boost the implementation of such systems in the market.

TU Darmstadt (Germany) will perform a series of tests and calculations to understand the mechanical performance of the systems and will build two demo buildings in their facilities, where the developed systems will be exposed to external environment for two years, in order to assess their durability in real life conditions.