

The InCSEB project aims at developing **five ultra-low carbon building steel envelop systems** thanks to the innovative use of wood fiber, a renewable and bio-sourced insulation material, while achieving a high level of thermal performance and ensuring compliance with other requirements such as mechanical, fire and acoustic.

The project started on 1 August 2021 and will end on 31 July 2025.

6 partners are involved in the project:

- L'ENVELOPPE MÉTALLIQUE DU BÂTIMENT (COORDINATOR) _ FRANCE
- JORIS IDE NV _ BELGIQUE
- TATA STEEL -MONOPANEL _ FRANCE
- TECNALIA RESEARCH AND INNOVATION - SPAIN
- TU DARMSTADT _ GERMANY
- UNIVERSITY OF COIMBRA _ PORTUGAL

The five innovative systems that will be developed are:

1. Two **prefabricated** steel envelopes made of sandwich panels with a wood fibre insulation core:
 - A cladding sandwich panel with two steel facings and a wood fiber core
 - A pitch roofing sandwich panel with two steel facings and a wood fiber core
2. Three **site-assembled** steel envelopes:
 - A double skin cladding system assembled on site with a wood fiber insulation material
 - A facade cladding system made in cassette and assembled on site with a wood fiber insulation
 - A flat roofing sandwich panel with two steel facings and a wood fiber core completed by a mineral wool insulation and a waterproof membrane assembled on site.

The project will carry out a detailed research programme which include:

- ✓ For each of these systems, an extensive series of tests will be carried out according to relevant EN standards to evaluate their mechanical, thermal, fire, acoustic performances and air permeability and vapour and water permeability.
- ✓ Two full scale building prototypes fitted with the new systems will be exposed for two years to the environment to study the durability of the systems in real life conditions.
- ✓ The indicators of LCA will be determined for the five systems and a comparison will be made in terms of carbon footprint (GWP) with conventional systems by taking an existing office building as a reference point.
- ✓ To facilitate the dialogue with stakeholders and the industrial application of the new systems, two designs guides, two installation guides and two publications will be prepared, together with three amendments to relevant EN standardisation committees and an industrial stakeholders' workshop.
- ✓ Five generic BIM objects will be produced to facilitate the incorporation of these new systems in the design of future buildings

- ✓ Four separate patents will be submitted to the European Patent Office to protect the commercial exploitation of the new innovative systems in the European Union and beyond