Hygrothermal behaviour of novel wood fibre composites with alternative binders – building performance simulation

Wood Waste Panel project – Junior researcher position at LOCIE / USMB

Project Summary

Wood Waste Panel is a transnational RTD project aims to address materials research and innovation, including materials for low-carbon and zero-waste technologies for buildings.

A novel manufacturing technology of bio-based building products – multi-layer panels – made of functional bio-composites will be developed using recycled waste from the production site of project partner CEWOOD Ltd. (around 10% of the fiber-board production volume). The second source of recycled raw materials will be wood waste from the construction demolition sites. Novel panels will have high thermal properties and be used as envelope elements for nearly zero energy buildings (NZEB). The main advantages of the proposed building products are rational use of the secondary resources (including wood fibers and recycled binder) and sustainability, as significant CO_2 savings can be achieved by avoiding bio-based material landfilling and encapsulating it in new material. The production process of novel building products will be energy efficient with low energy intensity, ecological, and no waste (circular).

LOCIE is part of the consortium of this project led by Riga Technical University.

LOCIE contributes to the hygrothermal macroscopic characterisations of the **ecological wood fibre composites with alternative binders** using both **experimental** methods and **numerical simulations** and will lead the assessment of their performance from **whole building perspective**.

LOCIE laboratory at Univ. Savoie Mont Blanc

With 15,000 students, a rich and multidisciplinary offer of academics and 18 internationally recognized research laboratories, Université Savoie Mont Blanc (Chambéry) is an institution on a human scale which combines proximity to its territories and a wide opening to Europe and the world. Between Geneva, Turin, Lyon and Grenoble, on the borders of Switzerland and Italy, with the unfailing support of the communities USMB is a major territorial, regional and cross-border player, in social, economic and cultural development.

Research is carried out by recognized, accredited and distinguished laboratories, which are involved in close partnerships with major organizations (CNRS, CEA, INRA), international organizations (CERN) or other structures (INES – National Institute for Solar Energy, Institut de la Montagne) which are also at the cutting edge of innovation. LOCIE research laboratory focuses on one of the important fields – energy and environment. One of the three scientific themes, BASE (Sustainable Buildings – Envelope and Structure), contributes to better understanding of thermal, mechanical and hydric responses of the envelope and structural elements of new or existing building, including in particular non-conventional and multifunctional materials. Four full professors and seven associate professors are involved with the team activities. LOCIE-BASE has long experience on the behavior of wall elements or structures comprising non-conventional low-embodied energy or low-carbon building materials (elaboration, reinforcement, hygrothermal and mechanical characterizations, investigations of coupled phenomena in porous media). Experimental studies are complemented by reliable modelling of coupled hygro-thermo-mechanical phenomena. The research studies are conducted in the frame of numerous PhD grants, academic and industrial collaborations and published in international journals. (https://www.univ-smb.fr/locie/en/bati-durable-structure-et-enveloppe-base/)

Junior Researcher position

The junior researcher will participate in numerical and experimental investigations of the transport phenomena in new bio-composites and multi-layered building products.

The candidate will be involved in the testing of developed panels in real conditions, by **analyzing data recorded by project partners** and conducting **numerical hygrothermal simulations using sensitivity analyses and uncertainty quantification.**

This project requires a candidate with:

- Good command of building performance simulation
- Some understanding of hygrothermal phenomena will be appreciated
- Some experience in programming will be appreciated;
- Good command of the English language

The candidate is expected to publish his/her research in a leading international journal and conference in the field, participate in the supervision of students and contribute to the collaborative projects within the laboratory. He/she is also expected to participate in project management in contact with project partners (preparing deliverables, helping in meeting organization, sharing information, etc). We are looking for a creative and curious person, who is able to work in a collaborative international environment, and demonstrates both autonomy & teamwork.

- ✓ 11 months, (01/10/2025 – 31/08/2026)
- ✓ Located at Bourget-du-Lac (73)
- ✓ Salary: according to University standards and experience. The position is open to PhD or Master graduates.

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Applications should be *send by email between 20 and 30 of August 2025*, including CV (with references and experience), academic record of Master Degree or PhD defense evaluation.
Interviews with selected candidates will be scheduled beginning of September.