

SEERFloor – Super energy efficient radiant floor systems

Summary

Scope – This project proposes the optimisation of aspects associated with design and execution to maximise the performance of the new radiant floor system. A catalyst for this proposal is the growing market share in European countries, where 50 to 70% of new buildings have radiant heating systems as the main means of air conditioning to the detriment of other systems, whether for residential or service buildings.

Main objective

The project proposes an innovative radiant floor system, constituting a substantial advance in the evolution of radiant water systems, both for heating and cooling environments.

Specific objectives

The project clearly aims to address the research gaps in current radiant floor systems, including:

1. Make these systems operational throughout the year, enabling the association of a cooling mode;
2. Incorporation of by-products from the pulp and steel industry, giving new use to rejected materials that can increase the properties of system layers, namely thermal conductivity/diffusivity and mechanical resistance;
3. Increase the thermal inertia of the system for heating and cooling modes, reducing energy consumption
4. Optimisation of the system in relation to operating conditions (control of water circulation temperature, latent energy of the PCM, outdoor, indoor, surface temperatures) and system operating schedule to store energy during periods outside the peak electricity supply;
5. Use in traditional or dry construction systems (new buildings or rehabilitation).

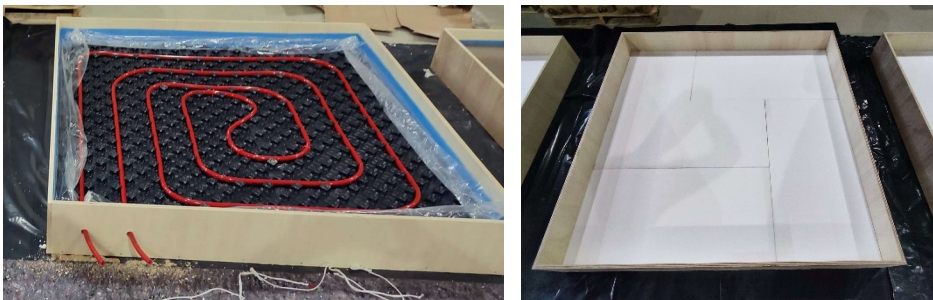


Figure 1. Preparation of a test specimen for a new radiant floor system.

Project Reference

PTDC/ECI-CON/3436/2020

Leading Institution

UA – Universidade de Aveiro (Portugal)

Partners

Itecons – Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade (Portugal), IPV – Instituto Politécnico de Viseu (Portugal)

CERIS Principal Investigator

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CERIS Research Team

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Funding

FCT – Fundação para a Ciência e a Tecnologia

Period

2021-2025

Total

236 503.81€

CERIS

Coimbra Hub: 66 080.00€

Project Website

<https://www.itecons.uc.pt/services/projects/111>