

## SRS – Smart roofs system: advanced roofs waterproofing system

### Summary

The Smart Roofs copromotion project aims to research and develop an advanced roof waterproofing system with thermal reflectance capability. This system is composed of a water-based polymeric membrane with UV reflective additives, reinforced with a smart textile substrate with coupled humidity sensing and regulation, and acceleration of the active heating curing process. Combining materials and technologies resulted in an innovative and distinctive solution for the demanding global construction market. Having as main application areas in conventional flat roofs (warm roofs) or inverted roofs, the project involved the development of a base layer mortar to support and interface between the insulation material and the waterproofing system in conventional flat roofs configuring a final product application kit. The resultant product of this project can respond to the cracking and reduced durability problems of the water-based polymeric membranes equivalent to or superior to the solvent-based membrane used in the current area. Its sustainable aspects characterized by the use of less polluting and unhealthy materials, and reduced material thermal absorption which consequently results in less damage to the structure system, lower costs associated with repairs, and greater ease of maintenance are crucial in purchasing decisions. Developments promoted in the areas of waterproofing liquid membranes; UV reflective pigments; textile structures with technical properties for reinforcing mortars; integration of moisture sensing and regulation systems in textile structures weaving

process; 3D printed sensors on textile substrate; and active cure process of waterproofing membranes.

To ensure the success of the project, a multidisciplinary team with complementary skills was defined with 2 companies – Saint-Gobain Portugal, S.A. and Têxteis Penedo, S.A. and 3 ENESII entities – ITECONS, CITEVE, and CENTI which, based on their areas of competence, guarantee the necessary competences in the various areas of project development and respond to the proposed challenge.

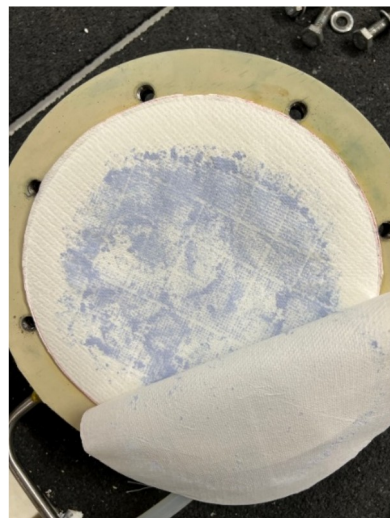


Figure 1. Result of watertightness test: watertight.

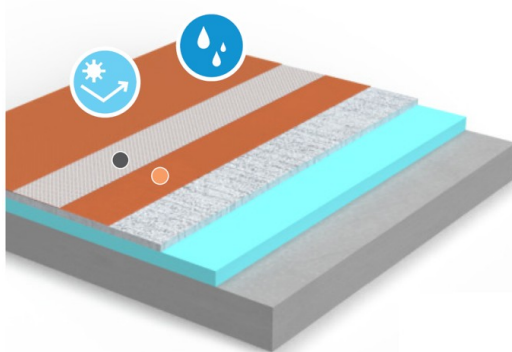


Figure 2. Schematic of Smart Roof System.



### Project Reference

POCI-01-0247-FEDER-046957

### Leading Institution

Saint-Gobain Portugal S.A. (Portugal)

### Partners

Têxteis Penedo S.A. (Portugal), Itecons – Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade (Portugal), CITEVE – Centro Tecnológico das Indústrias Têxtil e do Vestuário de Portugal (Portugal), CeNTI – Centro de Nanotecnologia e Materiais Técnicos Funcionais e Inteligentes (Portugal)

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### CERIS Research Team

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### Funding

COMPETE 2020, Portugal 2020

### Period

2021-2023

### Total

1 122 020.25€

### CERIS

Coimbra Hub: 156 275.23€

### Project Website

<https://www.itecons.uc.pt/services/projects/98>