SS-05

PASSIVE SOLUTIONS IN THE REHABILITATION AND ENERGY EFFICIENCY OF BUILDINGS

Organisers:

Ana Briga de Sá - anas@utad.pt

João Lanzinha - jcgl@ubi.pt

Abstract

The aim of this special session is to address the use of passive solutions in buildings rehabilitation and energy efficiency improvement. The increasing energy consumption and the consequent negative impact on the environment lead to the need to adopt energy consumption reduction measures. In the building sector, the high energy consumption can be minimized by using more efficient and sustainable solutions, whether in new buildings or in the rehabilitation of existing ones, recovering, sometimes, techniques that have been used in the past and which have fallen into disuse due to the introduction and generalization of new solutions and constructive methods in buildings. The introduction of passive heating and cooling techniques, such as the use of solar energy, enhancing the materials heat storage capacity, natural ventilation and green roofs and facades, may contribute to reduce the use of HVAC equipment and, consequently, to improve energy efficiency in buildings.

Justification

The presentation of scientific and technical articles in this domain is an important contribution to increase the knowledge in the field of civil engineering and architecture. At a time when climate change and scarcity of natural resources are a global concern, the adoption of more sustainable and efficient behaviours in the building sector is primordial given the high energy consumption and the high amount of CO2 emissions that this entails. In this context, it is extremely important to sensitize the different actors in the construction sector to this problem. The study of constructive solutions/techniques that contribute to improve buildings energy efficiency is crucial to meet European targets in this field. The integration of passive heating and cooling techniques in buildings is a contribution to achieve this objective. Improvements at the envelope, namely through the incorporation of new materials, occlusion and shading devices, introduction of passive solar systems, use of natural ventilation and evaporative cooling solutions, and integration of green roofs and facades are just some examples of techniques that can contribute to reduce energy consumption in buildings and increase indoor comfort. It is, therefore, important to disseminate the research work carried out in this area, both in terms of new buildings and existing ones undergoing energy rehabilitation operations.