

An Experimental Study of the External Thermal Insulation System's (ETICS) Efficiency in Buildings during Spring Conditions

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Abstract : The research group TEMA from the School of Building (UPM) is working in the line of energy efficiency and comfort in building. The need to reduce energy consumption in the building construction implies designing new constructive systems. These systems help to reduce both consumption and energy losses in order to achieve adequate thermal comfort for people in any type of building. In existing buildings the best option is the rehabilitation focused on thermal insulation. The aim of this paper is to design, monitor and analyze the first results of thermal behavior of the ETICS system in façades. This retrofitting solution consists of adding thermal insulation on the outside of the building, helping to create a continuous envelope on the façades. The analysis is done by comparing a rehabilitated part of the building with ETICS system and another part which has not been rehabilitated, and it is taken as reference. Both of them have the same characteristics. Temperature measurements were taken with type K thermocouples according to the previous design of the monitoring and in the same period of time. The pilot building of the study is situated in Benimamet Street, in San Cristobal de Los Angeles, in the south of Madrid. It was built in the late 50s. The 51st entrance hall, which is restored, and the 47th entrance hall, in original conditions, have been studied.

Keywords : comfort in building, energy efficiency in building, ETICS, thermal properties

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