

Investigation of Thermal Comfort Conditions of Vernacular Buildings Taking into Consideration Various Use Patterns: A Case Study

Authors : Christina Kalogirou

Abstract : The main goal of this paper is to explore the thermal comfort conditions in traditional buildings during all seasons of the year taking into consideration various use patterns. For this purpose a dwelling of vernacular architecture is selected and data regarding the indoor and outdoor air and surface temperature as well as the relative humidity are collected. These measurements are conducted in situ during the period of a year. Also, this building is occupied periodically and a calendar of occupancy was kept (duration of residence, hours of heating system operation, hours of natural ventilation, etc.) in order to correlate the indoor conditions recorded with the use patterns via statistical analysis. Furthermore, the effect of the high thermal inertia of the stone masonry walls and the different orientation of the rooms is addressed. Thus, this paper concludes in some interesting results on the effect of the users in the indoor climate conditions in the case of buildings with high thermal inertia envelopes.

Keywords : thermal comfort, in situ measurements, occupant behaviour, vernacular architecture

Conference Title : ICBPBE 2017 : International Conference on Building Physics and Built Environment

Conference Location : Berlin, Germany

Conference Dates : May 21-22, 2017