

Investigation on the Physical Conditions of Façade Systems of Campus Buildings by Infrared Thermography Tests

Authors : N. Türkmenoğlu Bayraktar, E. Kishali

Abstract : Campus buildings are educational facilities where various amount of energy consumption for lighting, heating, cooling and ventilation occurs. Some of the new universities in Turkey, where this investigation takes place, still continue their educational activities in existing buildings primarily designed for different architectural programs and converted to campus buildings via changes of function, space organizations and structural interventions but most of the time without consideration of appropriate micro climatic conditions. Reducing energy consumption in these structures not only contributes to the national economy but also mitigates the negative effects on environment. Furthermore, optimum thermal comfort conditions should be provided during the refurbishment of existing campus structures and their building envelope. Considering this issue, the first step is to investigate the climatic performance of building elements regarding refurbishment process. In the context of the study Kocaeli University, Faculty of Design and Architecture building constructed in 1980s in Anıtpark campus located in the central part of Kocaeli, Turkey was investigated. Climatic factors influencing thermal conditions; the deteriorations on building envelope; temperature distribution; heat losses from façade elements observed by thermography were presented in order to improve strategies for retrofit process for the building envelope. Within the scope of the survey, refurbishment strategies towards providing optimum climatic comfort conditions, increasing energy efficiency of building envelope were proposed.

Keywords : building envelope, IRT, refurbishment, non-destructive test

Conference Title : ICSAUD 2017 : International Conference on Sustainable Architecture and Urban Design

Conference Location : Boston, United States

Conference Dates : April 24-25, 2017