Development of a Program for the Evaluation of Thermal Performance Applying the Centre Scientifique et Techniques du Bâtiment Method Case Study: Classroom

Authors : Iara Rezende, Djalma Silva, Alcino Costa Neto

Abstract : Considering the transformations of the contemporary world linked to globalization and climate changes caused by global warming, the environmental and energy issues have been increasingly present in the decisions of the world scenario. Thus, the aim of reducing the impacts caused by human activities there are the energy efficiency measures, which are also applicable in the scope of Civil Engineering. Considering that a large part of the energy demand from buildings is related to the need to adapt the internal environment to the users comfort and productivity, measures capable of reducing this need can minimize the climate changes impacts and also the energy consumption of the building. However, these important measures are currently little used by civil engineers, either because of the interdisciplinarity of the subject, the time required to apply certain methods or the difficult interpretation of the results obtained by computational programs that often have a complex and little applied approach. Thus, it was proposed the development of a Java application with a simpler and applied approach to evaluate the thermal performance of a building in order to obtain results capable of assisting the civil engineers in the decision making related to the users thermal comfort. The program was built in Java programming language and the method used for the evaluation was the Center Scientifique et Technique du Batiment (CSTB) method. The program was used to evaluate the thermal performance of a university classroom. The analysis was carried out from simulations considering the worst climatic situation of the building occupation. Thus, at the end of the process, the favorable result was obtained regarding the classroom comfort zone and the feasibility of using the program, thus achieving the proposed objectives.

Keywords : building occupation, CSTB method, energy efficiency measures, Java application, thermal comfort

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