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KxKALI v0.1: A WORK-IN-PROGRESS TOOL FOR STREAMLINING THERMAL COMFORT EVALUATION IN BUILDING DESIGN AND OCCUPANCY

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Abstract – Thermal comfort evaluation is crucial in the design of buildings, as it impacts the well-being and productivity of building occupants. Many national regulations and international standards provide guidelines for assessing thermal comfort. In order to simplify this process, we have developed a program called KxKali, which is intended to evaluate thermal comfort based on temperature and relative humidity data input using the adaptative comfort model of EN 16798. The current version of the software, v0.1, is only able to accept data from computer simulation using the official Spanish simulation software HULC and performs graphing and counting automatically, without the need for the user to edit, modify or handle any data manually. By using HULC as the source of input data, the tool can take advantage of the software's established reputation and acceptance among professionals in the building design industry in Spain, streamlining the comfort evaluation process by eliminating the need to generate input data manually, or using additional software. However, future versions are planned to accept data from other software and also monitored data. In addition, there are plans to implement the evaluation of thermal comfort following other regulations. The ultimate goal of this project is to convert KxKali into a user-friendly and widely accessible web-app that professionals can use in the design phase without performing any additional work apart from what they are already doing for energetic certification, which may improve building design by allowing architects and engineers to quickly evaluate different thermal comfort scenarios and optimize their design for comfort, and also facilitate the process of post-occupancy evaluations (POE). The goal of this presentation is to show the current capabilities of the KxKali tool, and to obtain feedback from other specialists on how to improve it and make it more widely useful. In the paper, the limitations of using simulation data from HULC and the ongoing developments of KxKali such as accepting monitoring data and converting it into a web-app will be discussed. Additionally, the paper will showcase mockups of the future web-app version of the tool, providing a glimpse into its intended user interface, and the expected reporting and output.

Keywords – nZEB; overheating; post-occupancy evaluation (POE); prevention through design (PtD); thermal comfort; thermal simulation

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