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Renovation of existing glass facade in order to implement energy efficiency and media facade

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Abstract

Modern cities and their architectural structures undergo significant functional and physical changes. In recent years, the interventions on building envelopes have increased. Therefore, it is necessary to analyze potential remodeling of glass facades, along with applying the concept of smart technologies, in order to increase energy efficiency of the existing buildings. This paper analyzes the modernization process of devastated glass façade of the tall Slavija hotel, built in 1960s in Belgrade, Serbia, taking into consideration some positive examples of transformation and reskinning of buildings, where the aspect of medialization is an active part of urban renewal. The subject of this paper is the analysis of research findings about the improved thermal comfort of this building, after performing the replacement of its glass façade and converting the hotel building into a office building. Special attention was paid to the implementation of media technologies and final effects on energy balance of the newly designed facade.

The proposed solution is supposed to evaluate the improved thermal comfort that was achieved by a radical renovation of the facade and by replacing the existing facade with a new single façade (double and triple glazed units), with media elements as well as without them. The research results are presented as proposals for improving EE public buildings by implementing the latest system of curtain walls in order to increase the value of the buildings. One of the most important criteria included in the process of energy refurbishment is technological improvement of the existing buildings, along with the presentation of media facades. The case study is based on EnergyPlus simulations.

Keywords: media technologies, façade modernization, energy efficiency increase, energy refurbishment, energy simulation

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