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Solar façades – Main barriers for widespread façade integration of solar technologies*

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Abstract

Solar energy has been actively promoted as a clean energy source since 1973's oil crisis, evidenced by the emergence of initiatives such as the Solar Heating & Cooling Programme of the International Energy Agency or the US Department of Energy. Nonetheless, solar technolo-gies have not been widely used in the built environment, limiting their operation to industrial and macroscale applications. Commercially available products such as building integrated PV panels (BIPV) or building integrated solar thermal collectors (BIST); and novel prototypes and concepts for solar cooling integrated facades are seen as interesting alternatives for the development of new performance based façade components for high-performing commercial buildings. However, there are barriers to overcome in order to promote widespread application of architecturally integrated solar components.

The present paper seeks to discuss perceived barriers for widespread façade integration of solar technologies, in order to define the current scenario and generate guidelines for future developments. In order to achieve this, the paper presents the results of a survey addressed to professionals with practical experience in the development of façade systems for office buildings, situated at any stage of the design and construction process. Hence, architects, façade consultants, system suppliers and façade builders were considered. The outcome of this study is the definition of the main perceived barriers for façade integration of solar technologies, discussing the results from the survey along with other related experiences found in the literature.

This study is part of the ongoing PhD research project titled COOLFACADE: Architectural integration of solar cooling strategies into the curtain-wall, developed within the Façade Research Group (FRG) in the Green Building Innovation programme (GBI) of the Faculty of Archi-tecture and the Built Environment, TU Delft.

Keywords

Solar technologies, PV, Solar thermal collectors, Solar cooling, Façade integration, Survey

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