Condensation at the Exterior Surface of Windows

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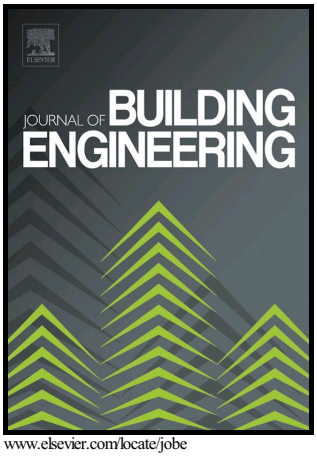

www.elsevier.com/locate/jobe

PII: S2352-7102(18)30361-9
DOI: https://doi.org/10.1016/j.jobe.2018.06.014
Reference: JOBE521

To appear in: *Journal of Building Engineering*

Received date: 23 March 2018
Revised date: 25 June 2018
Accepted date: 26 June 2018

Cite this article as: Anssi Laukkarinen, Paavo Kero and Juha Vinha, Condensation at the Exterior Surface of Windows, *Journal of Building Engineering,* https://doi.org/10.1016/j.jobe.2018.06.014

Condensation at the Exterior Surface of Windows

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New energy efficient windows have a higher risk for outdoor air vapour condensing to their exterior surface, when compared to older windows with lower thermal resistance. This external condensation can reduce visibility through the window, decrease owner satisfaction and affect the behaviour of window buyers and sellers. The purpose of this study was to analyse the impact of window U-value and other factors on the occurrence of external condensation. A combined heat and moisture transfer model was created and used for the calculations. According to the results, the duration and amount of external condensation are projected to increase in the future due to lower window U-values and climate change. Exterior surface emissivity, external shadings and building location had a big impact on the amount of yearly condensation hours, while window orientation and solar absorption coefficient had a smaller impact. There was also an interesting power-law-type correlation between yearly condensation hours and the median effective thickness of the condensation layer. The results

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