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The Acoustic Performance of Double-skin Wind Energy Facade

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Abstract : Wind energy applied in architecture has been largely abandoned due to the uncomfortable noise it causes. This study aims to investigate the acoustical performance in the urban environment and indoor environment of a double-skin wind energy facade. Measurements for sound transmission were recorded by using a hand-held sound meter device on a reduced-scale prototype of a wind energy façade. The applied wind intensities ranged between 2m/s and 8m/s, and the increase sound produced were proportional to the wind intensity.The study validates the acoustic performance of wind energy façade using a double skin façade system, showing that noise reduction indoor by approximately 30 to 35 dB. However, the results found that above 6m/s win intensity, in urban environment, the wind energy system applied to the façade exceeds the maximum 50dB recommended by world health organization and needs some adjustments.

Keywords : double-skin wind energy facade, acoustic energy facade, wind energy in architecture, wind energy prototype
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