



Assessment of acoustical insulation of double glass element by laser Doppler vibrometry and microphone measurements

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Abstract

In many countries, the use of double lightweight separating elements and structures in new buildings is growing, and the acoustic insulation remains an important topic of concern, in particular at low frequencies. In this work we report on laboratory measurements on nine different configurations of double-layered transparent elements embedded in the opening of a transmission test facility. The settings differed in the dimensions and shape of the cavity and on the amount and placement of acoustically absorbing material. Next to the standardized microphone measurements techniques, scanning laser Doppler vibrometry measurements were used to obtain a better understanding of the physical phenomena. The frequency dependent deflection shapes that were measured with the scanning laser Doppler vibrometer were allowed to determine to the acoustical insulation spectrum, which was compared with the one determined by classical, microphone based transmission measurements.

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