

VIBRO-ACOUSTIC ANALYSIS OF A RECTANGULAR 1 ENCLOSURE BOUNDED BY A FLEXIBLE PANEL WITH 2 CLAMPED BOUNDARY CONDITION

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TÓM TẮT:

A lot of research on the properties of a panel-enclosure coupled system which consists of an enclosure with a simply supported flexible wall was conducted. However, an enclosure with clamped flexible walls is commonly encountered. The properties of a panel-enclosure system, with one clamped flexible wall, are different from that of a simply supported one, and there are only a few studies on it. Thus, this paper is dedicated to the study of the effect of structural-acoustic coupling on the properties of a panel-enclosure system, which consists of an enclosure with a clamped panel. The resonance frequencies and the decay times of the coupled system are obtained using the classical modal coupling theory. The effect of enclosure and its flexible boundary on the resonance frequencies and the modal decay times of the coupled system are then analyzed. It is shown that when panel thickness is changed, coupling strength is determined by the difference between the resonance frequencies of the panel and the enclosure modes. However, for the variation of enclosure depth, the factor which determines the coupling strength between panel and enclosure modes is the enclosure depth or the difference between their resonance frequencies.