Active Vibration and Noise Control of the Honeycomb Sandwich Composite Plates

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ABSTRACT

The purpose of this project is to develop an active multiple mode vibration control of PZT honeycomb sandwich plate system. Active control in multiple modes of vibration of structures remains an engineering challenge issue. The research topics of this issue include the minimum numbers of sensors/actuators, the optimum locations of sensors/actuators, the development of simplified mathematic model for control design, the minimum control effort and the stability, robustness of the controller. Adaptively remains that were developed at the Chung-Shan Institute of Science and Technology, which has been utilized in the area of structural vibration control and flutter suppression. The d33 type piezoelectric actuators evaluated in this study include PZT with inter digital electrodes (IDE) and Macro Fiber Composites (MFC). Interdigitated electrodes (IDEs) are used for poling and to direct the electric field along the axis with major actuation of PZT. The PZT with inter digital electrodes actuators achieve greater actuation energy density by exploiting the d33 effect versus the d31 actuation used in most monolithic piezoceramic materials.

Keywords : macro fiber composites, vibration reduction, flutter control

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