World Academy of Science, Engineering and Technology
International Journal of Mechanical and Industrial Engineering
Vol:11, No:01, 2017

Active Noise Cancellation in the Rectangular Enclosure Systems

Authors : D. Shakirah Shukor, A. Aminudin, Hashim U. A., Waziralilah N. Fathiah, T. Vikneshvaran

Abstract : The interior noise control is essential to be explored due to the interior acoustic analysis is significant in the systems such as automobiles, aircraft, air-handling system and diesel engine exhausts system. In this research, experimental work was undertaken for canceling an active noise in the rectangular enclosure. The rectangular enclosure was fabricated with multiple speakers and microphones inside the enclosure. A software program using digital signal processing is implemented to evaluate the proposed method. Experimental work was conducted to obtain the acoustic behavior and characteristics of the rectangular enclosure and noise cancellation based on active noise control in low-frequency range. Noise is generated by using multispeaker inside the enclosure and microphones are used for noise measurements. The technique for noise cancellation relies on the principle of destructive interference between two sound fields in the rectangular enclosure. One field is generated by the original or primary sound source, the other by a secondary sound source set up to interfere with, and cancel, that unwanted primary sound. At the end of this research, the result of output noise before and after cancellation are presented and discussed. On the basis of the findings presented in this research, an active noise cancellation in the rectangular enclosure is worth exploring in order to improve the noise control technologies.

Keywords : active noise control, digital signal processing, noise cancellation, rectangular enclosure
Conference Title : ICNV 2017 : International Conference on Noise and Vibration
Conference Location : Singapore, Singapore
Conference Dates : January 08-09, 2017