# CAN Bus Implementation of Active Noise Control System


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**ABSTRACT**

This report describes the design of a vehicular controller area network (CAN) bus system with an application in active noise control for engine exhaust system. The work includes two parts: the first part is design with implementation of a CAN bus platform system; the second is an application of active noise control (ANC) in an engine exhaust system that is setting on the proposed CAN bus platform. The proposed ANC is based on the adaptive control algorithm with engine revolution reference. Most of the conventional methods for ANC are based primarily on an adaptive filter with the least-mean-square (LMS) error algorithm. Unfortunately, convergence speed is often limited when a sound source or a filtering plant is varied, because the learning process of the adaptive algorithm fails to respond quickly to the changing operational conditions. In this study, a variable step-size affine-projection algorithm (VSS-APA) is proposed. The proposed VSS-APA filtering algorithm is a combination of the variable step-size convergence algorithm and affine-projection algorithm (APA). The controller is implemented on the proposed CAN bus system. Experiments are carried out to evaluate the noise attenuation performance in various engine speeds. The experimental results indicated that the ANC system achieved the noise attenuation in an engine exhaust system by using the proposed CAN bus system.



Keywords : CAN bus, ANC, engine exhaust system.


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