

13. Study on the Control Method of Active Noise Control

Laura Kanazawa, Koichi Inadome

The applicability of the active noise control (ANC) method was examined to reduce peak sound in low-frequency band produced in factories or at construction sites. To applying ANC, accurate feedforward control is more effective than feedback control. The peak sound in low-frequency band is stationary, so feedforward control algorithm not referred to error signal but referred to only input signal was proposed. Furthermore, to limit the target frequency band that the low pass filter was inserted in the feedforward control algorithm.

The effects of the proposed algorithm was verified in the anechoic chamber. It was verified that the peak sound in low-frequency band could be reduced by more than 10 dB in the case where the sound source peaked in low-frequency band such as sound made by a fan and sound made by a generator. When ANC was actually applied to construction machinery, it was verified that the peak sound in low-frequency band could be reduced by 7 to 10 decibels.

In the future, control systems will be reinforced to apply ANC under more extensive conditions.

Keywords: low-frequency sounds, construction noise, factory noise, equipment noise, ANC