

13. A Study on Active Noise Control Method - Application of Active Noise Attenuation System to Actual Construction Work -

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Complaints are frequently filed about the noise produced by construction and industrial machinery in the neighborhood of a construction site or factory. Some construction and industrial machines produce noise at a much higher sound pressure level than other frequencies in the low-frequency domain (100 Hz or lower). Conventional noise control measures by installing fences or walls using sound-proof panels or other materials are not effective for reducing noise in the low-frequency domain.

Sash and other fittings in buildings provide insufficient sound insulation in the low-frequency domain. Outdoor sound predominant in the low-frequency domain is therefore likely to propagate into the building. Predominant sound in the low-frequency domain makes uncomfortable noise and may have adverse mental and physical effects on building occupants. To control such effects, an “active sound attenuation system” was developed. In this study, the “active sound attenuation system” was applied to noise in the low-frequency domain where predominant frequency and sound pressure varied from time to time (noise of a 50-t rough terrain crane used in shaft excavation during shield tunneling). As a result, the system was found to be effective for reducing predominant sound in the low-frequency domain.

Key words: active noise control, low frequencies, construction machinery, rough terrain cranes