NOISE SOURCE CONTRIBUTION OF ACCELERATING CARS AND AUDIBILITY EVALUATIONS

Shunsuke Ishimitsu

ABSTRACT

Recently, many researches who work with time-frequency analysis using wavelet transform have focused on analyzing wavelets that are derived using a mathematical approach. In the present analysis, a measured signal is adopted as the wavelet, and we analyze the correlation between acoustic signals in the car cabin and suction noise signals by applying the proposed system. Because traditional calculations of correlation repeat the averaging procedure, the original signal must be stationary. Consequentially, a technique for separating and identifying noises from each part of the engine has been used for noise source contribution analysis. To apply the method to time-varying signals, the concept of an instantaneous correlation factor (ICF) is introduced, and we prove that a dominant feature of the correlation can be estimated by the ICF. The time-varying correlation for noise source contribution analysis of an accelerating car is analyzed. In addition, a fundamental experiment on audibility impressions in that case was also conducted.