

عنوان مقاله:

Simulation and Experimental Study of Vibration and Noise of Pure Electric Bus Transmission based on Finite Element and Boundary Element Methods

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خلاصه مقاله:

Since the electric motor of pure electric vehicle replaced the engine, the masking effect disappears, and the problem of vibration and noise of the transmission becomes prominent. This is generated during the gear meshing and is transmitted to the housing through the shaft and bearing. Thereby, radiation noise of the housing are generated. The prediction and analysis of the vibration and noise problems of transmission can be avoided during the design process, which will shorten the development cycle and reduce the development costs. In this paper, the finite element model and boundary element model of the three-axis four-speed automated mechanical transmission (AMT) for pure electric bus were established by Finite Element Method (FEM) and Boundary Element Method (BEM) for modal and acoustic analysis. The excitation of the gear system is used as the input, and the direct boundary element method is used to predict the noise of the AMT. The correctness of the simulation method is verified by the comparing simulation with bench test results.

کلمات کلیدی:

Pure Electric Bus, Automated Mechanical Transmission, Vibration and Noise, Simulation, Experiment

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