

## **Study on Noise Radiated from Gear Case of Parallel Cardan Driving Device**

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In recent years, a drive-system noise generating from motor vehicles on meter-gauged railways is decreased by employing low noise traction motors. However, the sound level of a gear noise is still remained high relatively. The purpose of this paper is to investigate the fundamental noise characteristics of the vehicle gear systems. Therefore, we carried out mechanical dynamic behavior analysis to a parallel cardan driving gear device, which consists of a helical pinion and gear systems. Furthermore, we carried out FEM and BEM analysis to predict the sound power reductions of the gear systems under the condition where ductile iron is applied to the device as damping factor obtained from simple damping tests. Consequently, we found that the gear case using the iron ductile has decreased by 2 dB of sound power approximately compared to the current one.