Reduction of the Vibration and Noise of the Railway Pinion and Gear using High Strength Ductile Cast Iron

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In these years, drive-system noise generated from motor vehicles of meter-gauged railways is decreased by employing traction motors of a fully enclosed type. However, the sound level of the gear noise still remains relatively high. Our purpose is to develop a low noise gear system by changing gear materials. In this paper, to predict the vibration and sound power reductions of the gear system we are carried out a running test and the following three kinds of analyses of a low noise gear made of ductile cast iron (FCD900); mechanical dynamic behavior analysis, FEM analysis and BEM analysis. Consequently, we have found that the gear made of this material has a low sound level owing to the improvement of the gear contact surface, compared to the conventional one.