

**Aerodynamic Noise Reduction of a Pantograph by Relaxation of Interference between
Pantograph Members and by the Surface Covering with Porous Material**

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To reduce aerodynamic noise generated by a pantograph, the authors have already proposed some techniques, that is, shape-optimization of a panhead, relaxation of aerodynamic interference between panhead and articulated frame, and covering the surface with porous material. To evaluate the integrated noise reduction effect of them, a wind tunnel testing was performed with a Shinkansen pantograph to which these techniques were applied. As a result, it was found out that the noise level of the improved pantograph is lower by about 4dB than that of the currently-used pantograph.