

**Reduction of Aerodynamic Noise Generated by a Pantograph Head
By using Speaker-driven Synthetic Jet Actuators**

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With increase of the maximum speed of Shinkansen trains, it has become more and more important to resolve aerodynamic and aeroacoustic problems related to pantographs. This study attempted to control the flow around a pantograph head by using speaker-driven synthetic jet actuators in order to reduce aerodynamic noise. The results of numerical and experimental tests indicate that the synthetic jets can stabilize the flow around the bluff-shaped pantograph head, thus resulting in reduction of aerodynamic noise.