The Influence of Friction Blocks Connection Configuration on High-speed Railway Brake Systems Performance

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Abstract
The influence of friction blocks connection configuration on the interfacial tribology behavior and FIVN (friction-induced vibration and noise) of high-speed railway braking system is systematically investigated with a scaled brake test bench. The potential relationship among interface contact status, friction, wear, pressure distribution, heat distribution and vibration noise of the system is studied under dragging test condition. The results indicate that the connection configuration of the friction blocks has a significant impact on systematic interfacial tribology behavior, heat distribution and vibration noise. A floating connection mode can suppress the vibration noise of brake system. The interfacial heat distribution and systematic vibration noise are quite relevant with the contact status, interfacial wear and pressure distribution. The increase of interfacial wear will lead to an expansion of pressure concentration area and an aggravation of vibration noise. The result of this research is helpful for a further design optimization and noise reduction of railway brake system.

Full Text
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