Development of Displacement-Dependent Rubber Bush to Reduce Carbody Vibration Induced by Mass-Imbalanced Wheelsets through Traction Links

Takahiro TOMIOKA Tadao TAKIGAMI

Rotation of wheelset(s) with small mass-imbalance can induce relatively large carbody vibration and worsen riding quality. It is known that the excitation force due to an imbalanced wheelset is transmitted from a bogie to a carbody through traction links. To prevent this excitation, the authors have developed a displacement-dependent rubber bush for traction links which has a small gap between the rubber and the inner fixture. Unit testing of the rubber bushes to check their rigidity-property and durability, excitation tests using a full-scale test vehicle to verify the vibration isolation performance, and running stability testing with a bogie, have been carried out. Then a series of running tests on a commercial line have been conducted and the effectiveness of the displacement-dependent rubber bush has been confirmed.