Practical Use of a Vehicle Vibration Control System Using Secondary Variable Vertical Dampers

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Vertical rigid body mode vibration of a car body affects the ride comfort aboard railway vehicles, especially when they are running on the track maintained according to moderately demanding maintenance criteria. A sec ondary suspension damping control system using variable vertical hydraulic oil dampers has been developed in an attempt to reduce this type of vibration. The results of vehicle running tests on a local commercial line demonstrate that the system can reduce the power spectral density peak value of vertical vibration acceleration in the rigid body mode by approximately 80% and the ride quality level (L_T) is reduced by 4.4 dB. This system suppressed the vibration to such a degree that passengers would be able to perceive it; accordingly it has been in practical use on some sightseeing trains.