A Method for Monitoring Running Condition of a Bogie by Using an Axle Spring Isolation Rubber with a Built-in Piezoelectric Element

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Axle spring isolation rubber installed on an axle box is subjected to loads equivalent to the wheel loads during running. Therefore, to investigate a method for monitoring running conditions of a bogie, as first step in the research in this paper, we fabricated an axle spring isolation rubber with a built-in piezoelectric element (AIBP). Since an AIBP can generate an electric charge in response to the load, it may be effective as a method for monitoring the running condition of the bogie. Then, running test with AIBP installed on the bogie was conducted to obtain wheel loads by calculated by converting the electric charge generated from the AIBP into a load. The test result of running tests showed that the calculated rubber load correlates with the wheel load, so that the time waveform of the rubber load could be used to monitor the running condition of the wheel.