

**A Study of Quantifying and Reducing Electric Resistances
between Rail and Wheel**

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When rails become rusty, the shunt resistance becomes higher making it difficult for the track circuit to detect a train exactly. This is a problem of the rail-wheel contact system. Generally speaking, the electric resistance varies according to a load of a car, a state of wheel surfaces, a thickness of rust and a magnitude of track circuit currents. However, the relations between these factors and the resistance have not been analyzed. Therefore, we measured and analyzed the state of the electric resistance between rail and wheel for various conditions. In this paper, we describe the result of the test and a concept of new track circuits to prevent shunting malfunction.