

**Development of Re-adhesion Control Method Considering
Axle-weight Transfer of Electric Locomotive.**

Michihiro YAMASHITA Tadashi SOEDA

When a wheel slip occurs on a certain axle or when re-adhesion control is executed, the tractive force of the wheel-slip axle changes, which causes pitching of the bogie and the carbody. Consequently, a change occurs in the weight acting on other axles under adhesive status, and wheel slips are likely to be induced. If re-adhesion control is conductible, considering the changes in the weight acting on other axles as a result of axle-weight transfer from the wheel-slip axle, the use of adhesive force can be optimized. We developed a control system as designed to reduce the induction of wheel slip in consideration of axle-weight changes caused by other wheel slips. Specifically, the torque of other axles is increased or decreased based on the acceleration of the wheel-slip axle to suppress the induction of wheel slip. To verify the effectiveness of the control method, we conducted a water spring wheel-slip test using an EH200-type DC electric locomotive. We obtained the results such that the number of wheel slips decreases by approximately 20% on average, and verified that the average tractive effort increases by 4%.