

Evaluation Method for Allowable Continuous AC Arc Current of Contact Wire

Takamasa HAYASAKA Shogo WADA

The possibility of contact wire breakage due to AC arc discharge in electric railways has been qualitatively inferred based on the conditions of contact wire breakage in positive and negative DC arc discharge. However, railway operators need the precise threshold of the allowable continuous AC arc current with no possibility of contact wire breakage, because some breakage accidents occur at AC insulated overlap sections. In this study, the time until contact wire breakage against the arc current was experimentally measured. Then, heat conduction analysis was conducted to find the efficiency of heat transfer from AC arc discharge to the contact wire. Finally, an evaluation method for allowable continuous AC arc current with no possibility of contact wire breakage was proposed.