Measures for Fatigue Damage Reduction of Electrical Connection of OCL

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Electrical connections between the contact wire and the messenger wire are always subject to fatigue damage due to vibrations caused by the passage of pantographs. Therefore it is required to clarify fatigue mechanism of the electrical connection and suggest measures for damage reduction. In this paper, the authors focus on the resonance of the electrical connection and relative vibration displacement between the contact wire and the messenger wire considering them as major fatigue factors. As a result of OCL (Overhead Contact Line)-pantograph simulation, the authors clarified the conditions under which fatigue damage of the electrical connection can occur. In addition, the authors newly proposed an electrical connection which has the fatigue life of more than 10 million cycle.