Vibration Test Method for Connectors of Overhead Contact Line Based on OCL Vibration Analysis

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Electrical connectors connecting contact wires and messenger wires are sometimes subject to fatigue-failure due to vibration caused by train passage. It is therefore desirable to establish a method for evaluating the fatigue resistance of the connectors. Therefore, the authors proposed a test method consisting of two types of vibration tests that take into account the two fatigue factors of the connectors: the relative displacement of the contact wire and their resonance. The test conditions were determined by analyzing overhead contact line vibration using an OCL-pantograph simulation. Furthermore, the authors carried out vibration tests on real connectors and confirmed that the test results were consistent with the actual failure status of the connectors.