

WHEEL-RAIL CONTACT FORCES MEASUREMENTS USING STRAIN GAUGES APPLIED ON THE RAILS

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Abstract

The paper presents practical application of originally developed method for wayside measurements of wheel-rail contact forces using strain gauges and an overview of recently developed similar methods presented by different authors. Presented methods were compared and some of their advantages and disadvantages were identified, including convenience for practical use. Some problems related to preciseness of location of the strain gauges application were emphasized. The main task for achieving reliable and accurate measurement results using any method is to identify locations on the rail where it is possible to avoid crosstalk and to separate influence of the vertical forces and contact point position on the lateral forces measurements. Although different authors identified such locations, it appeared that in real on-site measurements due to existence of geometry imperfections of the rails, non-uniform foundation stiffness and other influencing conditions, calibration and some post-processing of the recorded data is often needed. Also, in order to obtain reliable results involvement of alternative ways for validation of the obtained results is very welcome including use of alternative methods like identification of the contact point(s) and comparison with calibration curve families.

Keywords

wayside , wheel-rail contact forces measurements, strain gauges, crosstalk

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