

Evaluation of Wheel Flange Contact Using Ultrasonic Wave

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The flange of a wheel has an important function of guiding the vehicle along the rail under considerable friction and lateral force. The frictional behavior in this situation relates to various problems such as flange climb derailment, wear of wheels and rails and noise of flange contact. This paper describes the measurement of the contact area between the wheel flange and the rail gauge corner to help the clarification of the mechanisms of these problems. In this study, an established ultrasonic technique was applied to evaluate the contact area between the wheel flange and the rail gauge corner by using a full-scale contact testing machine. As a result, the contact shape under the various surface conditions was determined. And it is confirmed that the increase ratio of contact area with the normal force is different from the theoretical result.