

Influence of Wheel Mating Parts on Probability of Detection of Flaws in Railway Axles

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In the ultrasonic inspection of railway axles, the echo heights essentially have some dispersion, which becomes wider for the flaws in the mating components such as a wheel seat. In this study, the relation between the flaw echo height and the reflection area of flaws was obtained for the hollow axles. The relation in the axle body was compared with the one in the wheel seat with the help of the probability of detection (POD) curve. The detectable area of a flaw with the probability of 90% at a lower confidence limit of 95% in the wheel seat was more than twice larger than that in the axle body.