

**Proposal of Evaluation Index for Rail Roughness  
and Planning System for Optimum Operation of Rail Grinding Car**

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In this study, we analyzed an index that was able to evaluate the rolling noise excited by the rail roughness, based on the vertical axle-box acceleration. From the result of the analysis, we found that standard deviation of the vertical axle-box acceleration of 100m lot, which processed by band-pass filter of 500-800Hz, has a high correlation with the rolling noise. Accordingly, we proposed this standard deviation as a rail roughness evaluation index to be used for establishing the rolling noise measures. Furthermore, using this evaluation index, we developed an optimum operation planning system for rail grinding car, through improving the existing MMT planning system. The developed system can take into consideration both the measure for the rolling noise and that for the rail shelling.