

Evaluation of disc cutter wear prediction models for shield TBM

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ABSTRACT

In this study, based on the disc cutter wear data obtained from Slurry Shield TBM and Earth Pressure Balance Shield TBM, reliability of three different wear prediction models is evaluated. From the analysis, it is found that the prediction model underestimates the wear of disc cutter. When the UCS of rock exceed 100 MPa, the estimated wear depth is similar regardless of prediction model. In the CSM model and Gehring model, the increase in CAI increases the excavation volume, and the field data of CLI in the NTNU model was lower than 20, which was analyzed to have less effect on the wear amount. As for the quartz content that affects the NTNU model, the quartz content in this study was 31.6~36.1, and there is no significant variation, so quartz contents do not have significant effect on wear characteristic.

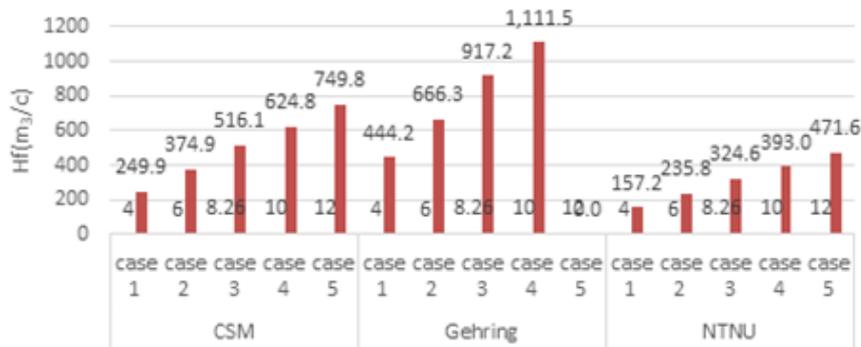


Fig. 1 Comparison between wear prediction models

Park, J.S. and Song, K.I. (2022), "A study on the wear and replacement characteristics of the disc cutter through data analysis of the large diameter slurry shield TBM field", *J. of Korean Tunn. Undergr. Sp. Assoc.*, 24(1), 57-78.

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