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Corrigendum

Corrigendum to: "Performance prediction of roadheaders in metallic ore excavation" [Tunnel. Underg. Space Technol. 40 (2014) 38–45]

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In the published paper, a general evaluation was carried out about the performance evaluation of roadheaders in metallic ore excavation by using the specific energy (SE) obtained from small-scale rock cutting tests. For a correct evaluation, the optimum SE obtained from full-scale linear rock cutting tests should be used when calculating the performance of roadheader by using Eq. (1) given in the paper. Alternatively, the optimum SE can be predicted from the equations suggested by Bilgin et al. (2006) or from the SE obtained from small-scale rock cutting tests by using the plot (Fig. 1) suggested by Balci and Bilgin (2007).

Although k value in Eq. (1) given in the paper is assumed as 0.8 in some literature for mechanical excavators (Balci and Bilgin, 2001; Balci et al., 2004; Bilgin et al., 2005), recently it is suggested as being between 0.45 and 0.55 for axial and transverse type roadheaders (Bilgin et al., 2014). Practitioners should be careful when using Eq. (1).

Considering the above information, the optimum SE3 values were predicted from the plot (Fig. 1) suggested by Balci and Bilgin (2007) and the instantaneous cutting rates were recalculated. The optimum SE3 values predicted are lower than the SE values given in the paper. The recalculated instantaneous cutting rates are also lower than the cutting rates given in the paper as shown in Table 1. The Fig. 4 in the paper was replotted to see the effect of new instantaneous cutting rates on the comparison between the performance prediction models. As indicated in Fig. 2, a slight change occurred on the scattering of the data points. On this plot, in addition to the data points of the model derived by Thuro and Plinninger (1999), the data points of the model derived

Table 1
SE and instantaneous cutting rate values.

Ore type	Ore location	SE1[a] values (kW h/m^3)	Predicted optimum SE3[a] values (kW h/m^3)	Instantaneous cutting rate (m^3/h)	Recalculated instantaneous cutting rate (m^3/h)
Hematite	Mentes/ Yahyali	3.5	2.8	22.9	16.2
Hematite	Dundarli/ Nigde	2.6	2.2	30.8	20.1
Hematite	Attepe/ Yahyali	3.5	2.8	22.9	16.2
Chromite	Kapiz mine/ Pozanti	7.7	5.3	10.4	8.5
Chromite	Guven mine/ Aladag	2.8	2.4	28.6	19.1
Chromite	Andizli/ Pozanti	5.6	4.1	14.3	11.1
Galena	Delikkaya/ Yahyali	2.5	2.2	32.0	20.6
Smithsonite	Derebag/ Yahyali	3.2	2.6	25.0	17.3

[a] SE1, obtained from small-scale rock-cutting tests for unrelieved cutting conditions at 5 mm depth of cut, and SE3 obtained from full-scale rock-cutting tests for relieved cutting conditions at 9 mm depth of cut.

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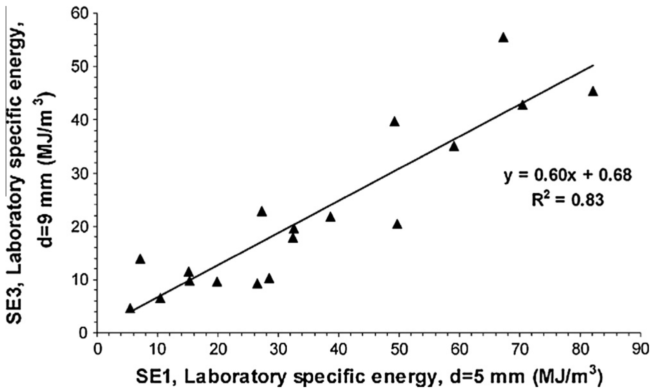

Fig. 1. The relationship between laboratory specific energy SE1, obtained from small-scale rock-cutting tests for unrelieved cutting conditions at 5 mm depth of cut, and SE3 obtained from full-scale rock-cutting tests for relieved cutting conditions at 9 mm depth of cut (Balci and Bilgin, 2007).

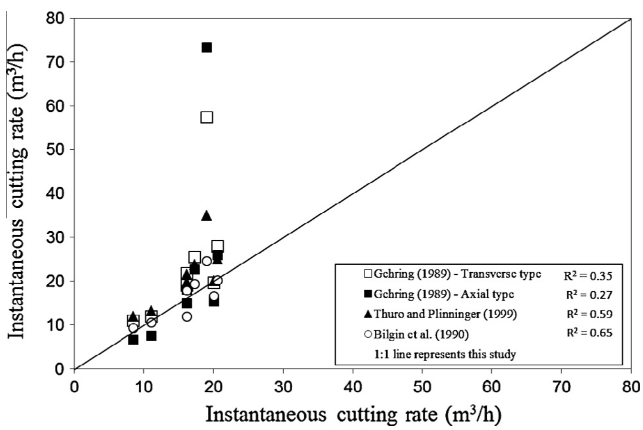

Fig. 2. The comparison of the performance prediction models for roadheaders (R^2 values are the determination coefficients of the correlations between this study and previous models).

by Bilgin et al. (1990) are scattered uniformly about the diagonal line. It can be said that the results of this study is consistent with the models derived by both Thuro and Plinninger (1999) and Bilgin et al. (1990).

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