

عنوان مقاله:

Statistical Study to Evaluate Performance of Cutting Machine in Dimension Stone Cutting Process

محل انتشار:

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تعداد صفحات اصل مقاله: 15

نویسندگان:

S. Shaffiee Haghshenas - *Department of Civil Engineering, University of Calabria, Rende, Italy*

R. Mikaeil - *Department of Mining and Engineering, Faculty of Environment, Urmia University of Technology, Urmia, Iran*

A. Esmailzadeh - *Department of Mining and Engineering, Faculty of Environment, Urmia University of Technology, Urmia, Iran*

N. Careddu - *Department of Civil, Environmental Engineering and Architecture (DICAAR), University of Cagliari; Institute of Environmental Geology and Geoengineering, IGAG, CNR, Cagliari, Italy*

M. Ataei - *Department of Mining, Petroleum & Geophysics Engineering, Shahrood University of Technology, Shahrood, Iran*

خلاصه مقاله:

Predicting the amperage consumption of cutting machines could be one of the critical steps in optimizing the energy-consuming points for the dimension stone cutting industry. Hence, the study of the relationship between the operational characteristics of cutting machines and rocks with focusing on the machine's energy-consuming is unavoidable. For this purpose, in the first step, laboratory studies under different operating conditions at different cutting depths and feed rates are performed on ۱۲ soft and hard rock samples. In the continuation of the laboratory studies, the rock samples are transferred to the rock mechanics laboratory in order to determine the mechanical properties (uniaxial compressive strength and modulus of elasticity). The statistical studies are performed in the SPSS software in order to predict the electrical current consumption of the cutting machine according to the mechanical characteristics of the rock samples, cutting depth, and feed rate. The statistical models proposed in this work can be used with a high reliability in order to estimate the electrical current consumed in the cutting process.

کلمات کلیدی:

Stone cutting process, Hard rocks, Soft rocks, Electrical current consumption, Statistical Studies

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