عنوان مقاله:

Study of the Effect of Lubricant’s Type on the Construction Hard Rocks’ Cutting Performance from the Energy Consumption’s Perspective

محل انتشار:

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خلاصه مقاله:

The process of cutting rocks is an abrasive process in which a huge amount of energy loss takes place due to thermal stresses, and is intensified with the increase of hardness, abrasion and resistance parameters. To improve and increase the efficiency of the cutting process and also reduce forces in the process, the produced thermal stresses must be minimized in order to increase the quality of the cut surface and also enhance the instrument’s life span. One of the most important strategies for achieving this purpose is to use an appropriate coolant and lubricant fluid in the cutting environment. In the present research, it was attempted to study the effect of lubricant’s type on the construction hard rocks’ cutting performance from the energy consumption’s perspective. For this reason, after constructing a cutting machine at an experimental scale, 48 tests at different operational conditions were conducted using three lubricant fluids, including lubricant & coolant powder and two types of soap water with ratios of 1 to 40 and 1 to 20. During each test, the machine’s consumed ampere was measured and recorded. Results obtained from studies showed that the amount of ampere consumption in the cutting machine was the lowest when using the lubricant fluid of lubricant & coolant powder, so that the use of lubricant & coolant powder as a lubricant fluid leads to 30% reduction in the ampere consumption

کلمات کلیدی:

Construction rock, disk cutting machine, energy consumption, lubricant