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CHOICE OF TRACTION BATTERY FOR MINING DUMP TRUCKS ON ELECTRIC DRAFT

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ABSTRACT

The paper presents an analysis of the leading companies in the production of lithium-based traction batteries (TB). The important characteristics and composition of TBs are described. The parameters of electromechanical transmissions of the BELAZ 7558 series mining dump trucks are given and, on their basis, the required characteristics of TBs for this series of trucks are compiled. Several TBs are made using components from leading manufacturers. On their basis, the priority characteristics for the choice of TB are identified. An analysis is conducted to determine the compliance of the created versions with the required technical specifications. The disadvantages of the presented battery types are specified. The study concludes that currently there is not enough information available on the characteristics of TBs and additional equipment for their operation. Most of the developed TB variants have relatively low energy density and therefore do not satisfy requirements for available energy and dry weight parameters. These parameters are critical for drawing the scheme of operation and charging cycle. The design life of most of the presented options is relatively short and this parameter requires further improvement.

Keywords: internal combustion engine, mobile energy source, electromechanical transmission internal combustion engine, mobile energy source, electromechanical transmission.