

Annotation

In the thesis, theoretical and experimental studies of traction electric drives (ED) of underground self-propelled transport are performed on the example of self-propelled cars. Design features, circuit solutions, modes of operation of SPV are analyzed, advantages and disadvantages of structures are described. The design calculation of the parameters of the mine self-propelled car was made on the basis of the design of the car IN 17K «kopeysky machine-building plant», load diagrams of the car are constructed, calculations for speed and braking are performed. Taking into account the operating conditions, the main electrical equipment was selected. The asynchronous motor of the explosion proof series AIUE225M4 used in the drives of loading machines was selected, combines and other mechanisms used in mines that are explosive in gas and coal dust. The Vacon frequency Converter NXP 0208 6 is selected, which provides power to four traction motors of a self-propelled car in conditions of 50% overload. The power Converter is located in an explosion-proof shell and based on the overall parameters, one is installed, not four converters of equivalent power. The characteristics and transients are calculated using a computer with the Matlab program. The selected motor and converter are tested for heating conditions using the equivalent current method. Based on the results of the work done, it can be concluded that the designed drive meets the necessary conditions, therefore, it is operable.