Annotation

The thesis discusses the issues of modernization of an automated electric drive of an overhead conveyor. "

The introduction addresses the relevance of the topic, the goals and main objectives of the project.

The main part of the thesis provides general information about the purposes, types and designs of conveyors. The conditions and modes of their operation are considered and the systems of electric drives used in conveyors are analyzed. The requirements for electric drives of conveyors are formulated.

In accordance with the results of the traction calculation, an asynchronous motor of type 4A112MA8U3 was selected for rated power and speed. The parameters of the engine equivalent circuit are determined and its natural and artificial mechanical and electromechanical characteristics are built and the energy indicators are determined.

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A power circuit of an automated electric drive is developed, a frequency converter is selected and the parameters of its elements are determined. A block diagram of a closed-loop electric drive system is developed, dynamic models of asynchronous motors and frequency converters are considered, and their transfer functions are determined. In the Matlab application package, a virtual model of the electric drive was compiled and the dynamics of changes in speed and torque in transient mode was studied.

The quantity of the powder fire extinguishing module was calculated and the probability of fires over a certain time was calculated.

In the economic part, the capital costs for the development of electric drives for twin-engine double-winding conveyors, energy costs and economic efficiency were calculated.