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Research Article

ORGANIZATION OF MINING TRANSPORT

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ABSTRACT

The article discusses mining vehicles that are used to ensure the non-stop operation of cement plants: high efficiency, high, high throughput and stability, low maintenance and repair costs.

KEYWORDS

Transport, productivity, reliability, climate, efficiency, personnel, prime cost.

INTRODUCTION

It should be noted that in order to ensure the smooth operation of cement plants, the selection of highly efficient machines operating in quarries is especially given.

The article pays special attention to providing factors: maneuverability; high permeability and stability, minimal construction costs, temporary roads for moving and transporting cargo, high performance and load capacity and reliability.

Recently, the demand for cement in the Republic of Uzbekistan has increased greatly.

For these purposes, more than ten cement concrete plants have been built and they normally meet the needs of consumers. For the implementation of work on the extraction of limestone raw materials in quarries, specialized high-performance vehicles are used. Quarry equipment includes single-bucket excavators, mining dump trucks, motor graders,

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bulldozers, tractors, loaders, etc. Classify vehicles used in quarries for their intended purpose.

The transport complex must meet all production requirements, withstand high loads, work in any climatic conditions, and also have maximum efficiency and reliability. Requirements depend on the method of extraction of raw materials.

The most common types of mining equipment are single-bucket excavators of various types, dump trucks of large and medium capacity, bulldozers. They are classified depending on the type, power, carrying capacity, technical characteristics. Quarry transport differs from other transport systems in mass; homogeneity and concentration of the direction of the main cargoes; high specific cargo turnover; significant road traffic; fast turnover of rolling stock; unsteady location of loading and unloading points; a large proportion of technological downtime; relatively short transportation distances; "hard binding" of technological processes to the transportation process; the rigid dependence of the location of transport communications on the structural features of the rock occurrence and the high weight of transport costs compared to the costs of other technological processes of open pit mining [2, 5].

The process of production of metallized products depends on the process of transporting minerals from a quarry to an intermediate and average warehouse or to a processing plant. In many ways, the production process is determined by the indicators of the transport complex. The occurrence of failures in the process of transportation of raw materials: the occurrence of equipment malfunctions, lack of availability of spare parts, lack of fuel, uneven supply of the excavator to the dump truck and vice versa, paperwork entails the occurrence of transport downtime, which contributes to stopping the entire production process. Hence, as a consequence, increased costs, loss of time and non-use of resources. [2, 6].

Mostly in quarries, BelAZ equipment is used. Its main advantages are: optimal maneuverability; high permeability and stability, minimal construction costs, temporary roads for moving and transporting cargo, high performance and load capacity and reliability.

The leading manufacturers of specialized mining equipment are Caterpillar, Liebherr, VOLVO, Terex, Komatsu, Belarusian and Mogilev plants, Izhorskiye Zavody OJSC, Uralmash machine-building corporation, etc.

For digging pits, loading and unloading minerals, clearing the territory, etc., diesel and electric modifications of excavator-type machines are used. The most widely used diesel-electric excavator-type machines cause difficulties in operation. The main advantages of diesel excavators are the performance of work under any climatic conditions, large carrying capacity, high operational reliability, high productivity, safety in excavation and loading operations.

The use of road quarry transport is limited to a short distance for the transportation of minerals, and also depends on the condition of the roadway, climatic conditions and the technical condition of other vehicles involved in the transportation process.

Many enterprises are trying to improve the efficiency of the transport complex operation. The mode of traffic is determined by the type of quarry. Since the quarry has a limited size and the area of access roads and sites does not allow for loading and unloading maneuvers, therefore, mining enterprises are developing various methods to optimize the use of quarry road transport. The scheme of access roads for

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loading is selected taking into account the shortest time for supply, change of dump trucks. The performance of an excavator is determined by the duration of loading a dump truck with iron ore. In turn, the duration of loading depends on the volume of the body of the dump truck, the bucket of the excavator.

To reduce downtime in work, it is necessary to organize work according to a cycle, distributing dump trucks among excavators. This will allow to reduce the time waiting for transport, downtime of dump trucks for loading. [nineteen].

In order to control the process of transportation, the use of a management system is required. By providing information on the status of loading and unloading operations to the dispatcher, it is possible to correct the transportation process and apply timely decisions on changing the production situation.

The indicators of automobile career transport are determined by the operating conditions (including the distance of transportation), the state of the rolling stock and the technical operation system, characterized by the technical readiness of the vehicle fleet and the utilization rate of the vehicle fleet [1, 8].

The productivity of the transport complex of mining and processing plants is determined by the distance of transportation, the technical speed of movement, the types of excavators, the degree of use of working time [2, 4, 7].

To avoid repair downtime due to malfunctions, regular maintenance is required. When eliminating a failure, due to the failure of a unit or unit, it is required to carry out timely repairs and the availability of the required spare parts [3, 5].

The creation of a perfect system for the technical operation of the transport complex of mining and processing plants can increase the efficiency of open-pit automobile transport. A perfect technical operation system should be based on operating conditions, the number of rolling stock, the maintenance and repair system, personnel qualifications, and the production basis for the extraction of raw materials. Taking into account these indicators, it is possible to reduce the length of transportation, increase the maneuverability of transport, reduce the time for transportation, eliminate stops in work and, as a result, reduce material costs for the extraction of limestone raw materials.

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