

UDC 629.017

Sereda B., Doctor of technical sciences, professor

Zuzin Y., PhD student

Orel V., PhD student

Dnipro State Technical University, Kamianske, seredabp@ukr.net

ECONOMIC ASPECTS OF TRANSPORTATION MANAGEMENT EFFICIENCY IN METALLURGY

Motorized mining vehicles are widely used in open-pit mining operations around the world. The expediency of using motor vehicles in mining is due to their high technical and economic performance when used in various conditions. Improving the operation of mining dump trucks by rationally distributing them among excavators, taking into account the influence of various technical and operational factors and the structure of the fleet, will increase the productivity of mining vehicles, reduce the downtime of the automobile excavator complex, increase the volume of transported rock mass and, as a result, reduce the cost of its transportation. In today's environment, one of the main tasks of any enterprise is to increase the efficiency of the transportation process at minimal cost. In open-pit mining, the primary mode of transporting rock mass is through open-pit transportation. Its objective is to transfer overburden from excavation fronts to dumps and ore from fronts to either the processing plant or the warehouse for finished products. Mining transport encompasses various methods, categorized into two main groups. The first is continuous transport, including railways, a prevalent mode in quarry transport. Road transport, commonly utilized in quarries with small to medium production capacity, and mechanisms like skip hoists and cable cranes also fall under this category [1].

Areas of effective use of road mining transport: construction of quarries, development of deposits with irregular contours or deposits located in mountainous and rugged terrain; development of horizontal or slightly inclined layers in case of rapid advancement of the work front; excavation of minerals by grade or excavation of individual layers and blocks; development of deposits located at great depths. For the most part, quarries that use road mining transport have limited dimensions (usually no more than 2-3 km long and 150-200 m deep). The optimization of road mining transport is associated with the highest possible utilization of excavators in the workings. Therefore, the scheme of access roads for loading is chosen taking into account the shortest time for maneuvers, delivery and change of dump trucks. The duration of loading is influenced by the productivity of the excavator (loader) and the volume of the dump truck body, which should be a multiple of the excavator bucket capacity.

Changes in a dump truck's route (redirecting to another excavator) can occur due to excavator malfunctions or its relocation to a different face. These decisions are typically made by the main production foreman, who reports to the chief shift supervisor at the open pit

Improving the operation of mining dump trucks by rationally distributing them among excavators, taking into account the impact of various technical and operational factors and the structure of the fleet, will increase the productivity of mining vehicles, reduce downtime of the road excavator complex, increase the volume of transported rock mass and, as a result, reduce the cost of its transportation.

References

1. Pomazkov M.V., Simkin A.I. Mekhanizm operativnogo upravleniya otsenkoy tekhnicheskogo sostoyaniya parka bolshegruznykh avtosamosvalov v metallurgicheskoy promyshlennosti. [The mechanism of operational management evaluates the technical condition of the fleet of heavy-duty dump trucks in the metallurgical industry] *Zakhist metalurgiy-nikh mashin vid polomok: zb. naukovykh pracz / PDTU.* – Mariupol, 2009. Vyp. 11. – С. 87-89. (in Ukrainian).