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JUSTIFICATION OF THE USE OF CONTAINER TECHNOLOGY IN DUMPING

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Abstract – The increase in the depth of the quarry is associated with an increase in the work of quarry transport in limited areas. A constant increase in the number of transport units is required, which increases the environmental burden on the environment. The rock mass extracted from the quarry is stored in external dumps, which occupy large areas and significantly worsen the ecology of the region. The operation of mining equipment on dumps with existing technologies causes a number of problems, the main of which is the movement of equipment near the prism of a possible rock collapse. It is proposed to use container technology for transporting the laying rocks in the dump, where the main element of the technology is a mobile lifting machine, which eliminates the need to build roads or railways on board and on the surface of the dump. Self-unloading of container equipment allows you pour the rock mass directly to the place of laying on the dump. Containers with rock are installed in front of the front of the dump, and the lifting machine is placed on a special platform of the dump. The rock mass is delivered from the faces by dump trucks of any load capacity and unloaded into the hopper of a plate feeder, which fills the containers as they are fed by a quarry lifting machine. The rock is laid in horizontal layers within the step of moving the lifting machine. The weighted average height of the rock rise is equal to half the height of the dump tier. With the new technology, the entire amount of work will be performed by one lifting machine. Increasing the height of the dump to 80 meters with a new method of dumping reduces the area occupied by dumps by 175 thousand m² per year. The use of container technology in the formation of the dump allows, when unloading rock from containers into the dump, to reduce energy consumption during the formation of the dump, and increase the economically advantageous height of the dump. This reduces the area occupied by dumps and reduces the harmful effects of mining on the environment. The article discusses the technology of dumping during the formation of dumps using bulldozers in the conditions of Northern Kazakhstan. Traditional technology involves the involvement of a complex of equipment consisting of 8 dump trucks and 1 bulldozer. According to the new technology, the same amount of work can be done by one lifting machine. Based on the calculations carried out, it was found that the intensity of dust emissions from internal sources decreases by 1,576 tons per year. A decrease in dust emissions is also observed with an increase in the height of the dump due to a decrease in area, while the difference was 75.57 tons per year. The total decrease from container technology is 1,651.57 tons per year.

Keywords – *Conveyor; dump; efficiency; gripper; lifting machine; productivity; reloading unit*

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