WAYS PERFECTION OF EFFICIENCY OF TRANSPORTATION MOUNTAIN WEIGHT ON OPEN-CAST MINES

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The fuel and energy complex of Uzbekistan occupies a special place in the economy of the republic, is a system of life support for the population, political and economic independence of the state.
Stable and uninterrupted supply of the economy sector and the population of the republic with high-quality fuel and energy is one of the most important factors in the successful implementation of the economic systems implemented in Uzbekistan.

The energy supply strategy of Uzbekistan provides for a rational combination of extraction and production of all major energy carriers with a primary focus in the period until 2018 on the gas industry.
In 2014, in the structure of primary energy resources used for the production of electricity and heat, gas fuel accounted for 84.2%; fuel oil - 11.1%; coal - 4.7%.

Considering that oil and gas reserves in Uzbekistan are limited, and coal reserves are significant, and also taking into account that more than half of the world's coal production is used in the electric power industry, more than 50% of the electricity produced in Europe and in some developed countries of Asia is obtained from coal, moreover, its share in the coming decades will remain dominant. By rationalizing the structure of the fuel balance, it will make it possible to increase the share of coal in electricity generation to 17.5%, and reduce the consumption of natural gas to 71.1%

Republic of Uzbekistan as of 01.01.2004. has proven reserves of coal in the amount of 1,890 million tons, including brown - 1,843 million tons, stone - 47 million tons.
Coal mining is carried out by 5 coal mining enterprises, which develop: Angrenskoye brown coal deposit (open pit mine "Angrensky", Mine No. 9 - underground method, station "Erostigaz" - by underground coal gasification method), Shargunskoye and Baysunskoye coal deposits (underground method mines "Shargunskaya" and "Baysunskaya").

An increase in coal production in the republic to 9.4 million tons and an increase in the technical and economic indicators of the industry is envisaged mainly due to the phased technical re-equipment of the Angrensky open-pit mine with the introduction of flow and cyclical-flow technologies that ensure an increase in coal production at the open pit to 7790 thousand tons ...

The project for the technical re-equipment of the Angrensky open-pit mine provides for a phased replacement of the cyclic technology with a continuous one when mining overburden - secondary kaolin and coal seams, as well as a cyclic-flow one when mining gravels on the upper horizons of the northern and north-western sections of the open pit. In order to eliminate the cost of re-cutting existing benches (10 m high), as well as the organization of explosion-free extraction of rocks and coal from horizons +906 to +780, it is planned to use complexes, including a compact rotary excavator + reloader + conveyor complex + spreader, ensuring the development of three benches with a height of 10-11 meters per one face (section) conveyor, transportation of rock from the face to the storage site to the inner dump.

Thus, the costs of assembly, disassembly and relocation of local transport systems are reduced. [1]
In total, it is planned to install four sectional conveyor lines with their location at the horizons +886, +858, +831 and +800 m.Installation of face conveyors at four levels allows to divide the flows into:
- mining, transportation and storage of variegated kaolin in the internal dump;
- mining, transportation and storage of gray kaolin in the internal dump;
- mining, transportation, sorting with coal supply to the Dzhigiristan station and rock supply to the internal dump;
- mining, transportation and supply of coal to the station Dzhigiristan.

The ledges located above the +1010 horizon, folded with pebbles, are planned to be worked out by cyclical-flow technology.

Overburden rocks (gravel) are mined by single-bucket excavators of the EKG-12.5 type with loading into BelAZ dump trucks with a lifting capacity of 40-75 tons.

Dump trucks deliver rock to semi-mobile crushing plants located at a distance of up to 1 km from the face. From crushing plants located on the mountains. +1010 m, rock in the amount of 12 million m3 per year is transported through a system of conveyors to internal dumps to the mountains. + 783m.

From the crushing plant located at a horizon of +1090 m, the rock in the amount of 7.5 million m3 per year is transported to an external dump located to the north of the mine.When storing rocks in dumps, dumpers are used.

The use of cyclical-flow technology will make it possible to maximize the use of the existing fleet of excavators and heavy vehicles, increase their productivity and reduce the cost of transporting rock to dumps and their storage. Complexes in cyclic-flow technology consist of shovel type excavators + heavy trucks + semi-mobile crushers + conveyor system + spreader. Due to the minimum mileage from excavator up to a semi-mobile crusher (up to 1 km), as well as with the device of descending cargo flows, high productivity of mining and transport equipment is ensured. Further transportation of rock by conveyors ensures a reduction in the cost of manufactured products. In addition, the use of a conveyor ensures the transportation of gravel to internal dumps from a horizon of + 1010m to + 780m, while reducing the length of transport communications from 8 km (when using railway tracks) to 3 km.

Taking into account the world experience of open pit operations in the development of coal deposits, a promising direction for the development of mining operations provides for the maximum use of the mined space for internal dumps! During the operation of the open-pit from 1947 to 2014, more than 1 billion m3 of rock and coal were removed. At the same time, about 200 million m3 of secondary kaolins were stored in the internal dumps. Thus, about 800 million m3 of overburden can be placed inside the open-pit mine. The main limiting factor currently is the use of rail transport. 40% of the area inside the mine is allocated for transport routes and stations.

Replacement of railway transport with conveyor transport at the lower horizons will free up these areas for storing overburden rocks.

The phased introduction of new technology and equipment at the mine creates conditions for the gradual replacement of railway transport with conveyor transport.

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