

**RELEVANCE AND UPDATING OF RESOURCE-SAVING ENTERPRISES CONCEPTION**

Classical technology of iron ores open-out mining runs across such difficult to overcome obstacle as lack of free lands for stockpiling waste materials nearby industrial works. The activities of mine-mill plants are characterized by considerable ejections of noxious and contaminated substances into the environment. In connection with the above stated it seems necessary to have a principally new approach to choosing method of mining and retreating minerals, and in particular, iron ores, that consists of applying resource-saving and ecologically clean technologies.

Realization of the new approach to mineral mining and retreatment foresees change to blast-free in-line production technology using some elements of underground mining in open casting. The new conception of creating the ecologically clean enterprise comprises a number of principal propositions: mining method must be blast less and continuous /in-line/, technology of processing-waterless, carried out in the face and providing for stockpiling dry tailings in the worked-out space of a quarry. The process flow sheet of a mine-will plant of the new type includes usage of continuous mining machines and reprocessing mining machine that eliminates the necessity of crushing-dressing complexes and slime storages application.

As it was noted the elements of technology and equipment for the conception realization principally have already been made. Practical experience of mines abroad confirms high efficiency of continuous miners use at constructing horizontal and vertical openings. For instance, mill-cutting combine KSM-2 /FRG/ has the capacity of 400 t/h when cutting rocks with uniaxial compression strength of 100 MPa. The mining machine "Dosco LA 1300" designed for horizontal opening driving is made by the firm "Dosco Overmeas Engineering" /Great Britain/. There are produced machines for driving mine openings that may be used for continuous mining of hard rocks. In order to increase efficiency of ore extraction by continuous mine nears rock masses to be mined are weakened beforehand. Preliminary estimations showed that power-consuming factor is identical in comparison with traditional technology comprising utilization of drilling-and-blasting operations in ore breaking.

The new method of ore mining foresees mineral retreatment in the mined-out area of a quarry according to the scheme of dry magnetic separation. With this, over winding of ore grains decreases, conditions of mineral separation improve and the scheme of devices network simplifies and the main thing processes of thickening and filtration are eliminated.

The next element of the conception – it is intra mine overburden and tailings stocking. The idea is not only theoretically tested and realized in practice. It is known that existing technology of tailings hydro transporting and storing is complicated and expensive. According to our conception it is offered to carry out drive storing of tailings together with overburden rock in the mined-out area. Realization of the new conscription must be fulfilled stage-by-stage.

Combination of both technologies exists at the first stage. Dry retreatment of ore is made in quarry till obtaining the main mass of dry final tailings and rough concentrate with iron content 60-64%. Such concentrate is fed by pneumo transport or pressure hydro transport to the existing dressing mill where it is subjected to after dressing by wet method till rich concentrate will be obtained. At the main part of dry tailing will be already stocked in the quarry mined -out area, the remained and considerably lesser portion of tailings can be directed to the existing tailings pond in the form of pulp or after de-watering it may be stockpiled together with overburden and dry tailing in the quarry mined-out area.

Overburden-free, ecologically clean technology of ore mining in deep open pits is the intermediate step of multi operational opencast change over to continuous machine mining of minerals at mine-mill enterprises. Enlarged analyses showed that with practically complete depreciation of the main funds of mine-mill plants material costs connected with construction combined mine dressing complexes in quarries and their utilization are considerably lower in comparison with expenses for renewal of working mine transport and processing equipment.

Positive ecological consequences of such technical decision are highly important.