

DEVELOPMENT OF THE CONCEPT OF DIRECTIONAL BLASTING BY CONVERGING BOREHOLE CHARGES

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The destruction of rocks by explosion will remain in the foreseeable future the basis of almost all applied geotechnologies, both in underground and open-pit mining of ore and a significant part of non-metallic deposits. The current level of development of blasting requires new explosion control capabilities in various technological processes. This is possible by using various trailers to control the energy distribution in the rock mass. The idea of this implementation is to reproduce a single charge of a given mass and shape by dispersing it in several smaller charges, the arrangement of which simulates the shape of the main charge. At the same time, the question of the role of trigger effects in the explosion of close charges is of interest. This circumstance opens up the possibility of controlling the process of explosive destruction of a rock mass for technological purposes, associated with a purposeful change in the conditions for the formation and shape of the integral wave of a beam (deconcentrated) charge. In this case, the well-known traditional methods of controlling the explosion of mono-charges become, in various combinations, a means for creating conditions for the interaction of cylindrical waves, in which several energy flows symmetrical with respect to the axis of the charges form a technologically determined asymmetric energy flow front of the destruction of the drilled array.

A huge variety of mining-geological, hydrogeological, physico-chemical and technical factors affecting the quantitative and qualitative indicators of explosive rebound has led to the creation of an extensive system of methods for controlling the action of the explosion.

IPKON RAS has developed and proposed a classification of methods for managing industrial explosions by technological factors. In total, the classification covers 50 methods of explosion control, which are divided into 5 classes, including II groups.

This work is devoted to theoretical and experimental studies that allow us to substantiate, develop and develop the concept of a new method for controlling the directional action of an explosion by beam borehole charges.

The universal approach to energy distribution management being developed opens up new possibilities integrally including the entire arsenal of known techniques and tools already accumulated.