AP22785093. Research and justification of mine workings supporting technology with increased rock arching zones stability control while thick coal seams mining. sc.sp. – Khalikova E.R.

Relevance

Increasing the depth of development with relatively low rock strength and using supports with insufficient bearing capacity and structural flexibility are the main reasons for the unsatisfactory condition of mine workings. Analysis of the operation of mining sites in the Karaganda basin mines shows that there are significant reserves for increasing labor productivity and reducing the cost of coal due to the discrepancy between the methods of developing seams and the mining and technical conditions of their application, the complication of mining and geological conditions for extracting seams when deepening mining operations (the presence of tectonic faults, increased gas content, etc.), there are disproportions in the capacities of related technological links and processes, etc. Taken together, all this leads to a decrease in the reliability of production processes of mining operations, and, consequently, to economically unjustified costs. The use of the noted reserves is especially important when implementing progressive technological schemes for conducting mine workings and designing progressive technology for developing thick gas-coal seams with complex mining and geological conditions.

The problem of stability of mine workings remains one of the most pressing and determining the efficiency of coal mines in various basins of the Republic of Kazakhstan, this requires the following scientific and applied research and work:

- it is necessary to make well-founded technological decisions to determine the parameters of the support in areas of increased rock arching;
- to provide a geomechanical predictive assessment of the deformed state of the rocks of the host mountain range on thick coal seams;
- develop and implement technology and means with justification of the parameters of their fastening, taking into account the stress-strain state of the host rocks.

At present, the prospects for the development of the presented scientific direction for underground works in the coal industry of the Republic of Kazakhstan depend on the use of the results of scientific and applied research and the implementation of pilot industrial testing of promising developments in the coal mines of Karaganda basin.

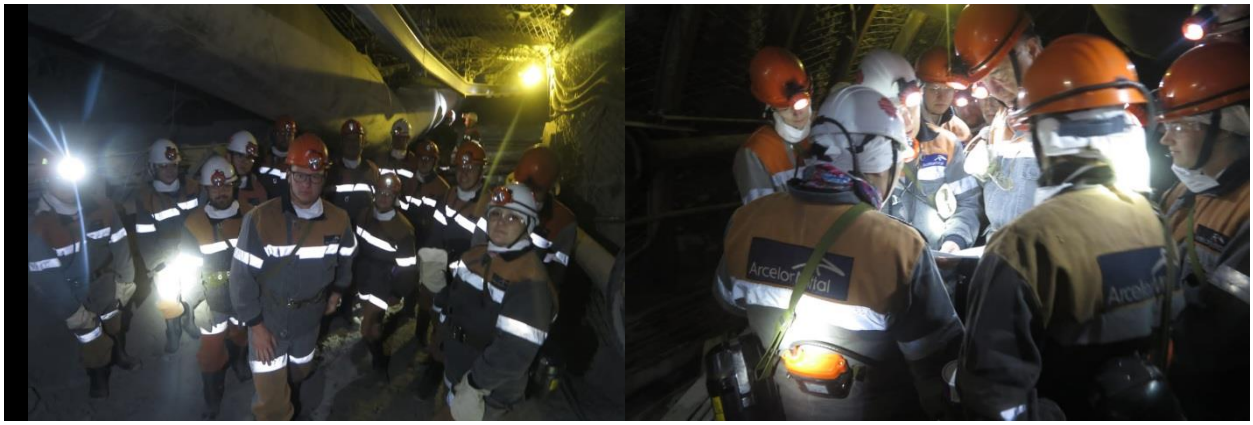
Project goal

The aim of the conducted research is to create a progressive technology for maintaining the contouring extraction columns of mine workings based on the established patterns of rock behavior during the development of layers of thick seams, ensuring increased efficiency and safety of underground mining operations.

Expected results

Upon completion of the project, evidence of the proposed concept will be presented, a process flow diagram will be developed, individual elements of the technology will be created, laboratory studies of individual elements of the technology will be conducted, and their modeling will be carried out.

1. At least 2 (two) articles will be published in a peer-reviewed foreign or domestic publication recommended by the committee on the study of the scientific and practical education of the Russian federation.
2. At least 2 (two) articles and/or reviews will be published in peer-reviewed scientific journals on the scientific direction of the project, indexed in the science citation index expanded of the web of science database and/or having a citescore percentile in the scopus database of at least 50 (fifty).
3. A monograph will be published.
4. One patent for an invention and a certificate of state registration of intellectual property rights will be obtained.



	Research work within the framework of the project at industrial enterprises of Karaganda region	

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Information for potential users

As a result of the project implementation, aprogressive technology for maintaining the contouring extraction columns of mine workings based on established patterns of rock behavior during the development of layers of thick seams, ensuring increased efficiency and safety of underground mining operations.

Scope of application

Mining production in the coal industry with the dissemination of the obtained scientific and technical potential to underground mining enterprises.

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