



## **PROBLEMS OF DEVELOPMENT OF INNOVATIVE ACTIVITY OF THE MINING AND METALLURGICAL COMBINE**

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### **Abstract:**

The article examines the main problems hindering the development of innovative activities of mining and metallurgical plants. The economic, technological, and organizational barriers to innovation in the industry are analyzed. The key factors influencing the level of innovation activity are identified, and ways to overcome them are proposed.

**Keywords:** Innovations, mining and metallurgical plant, technologies, modernization, investments, sustainable development.

### **Introduction**

Innovation is an important factor in increasing the competitiveness and efficiency of mining and metallurgical plants. However, the introduction of new technologies and solutions faces a number of challenges that slow down the development of the industry. This article analyzes the key obstacles to active innovative development, as well as proposes possible solutions to these problems.

At present, the world economy is at the present stage, which is characterized by an accelerated pace of scientific and technological progress and an increasing intellectualization of the main components of production. At present, industrially developed countries use the latest technologies as a strategy of economic growth, which includes intensive research and development, access to world markets and the deployment of international integration in the scientific and production sphere within the framework of the emerging global economy. Intellectual resources and the latest technologies determine the prospects for economic growth, as well as the level of economic independence, well-being and status of the country. Their inclusion in the global economy is one of the main factors determining the competitiveness of national economies. The meaning of interaction between these



countries is more and more focused on the development of technological innovations of global application, which have promising international markets and integrate the innovation systems of different countries and regions.

At present, the gross domestic product growth of the developed countries of the West is from 70 to 85 percent due to new or improved technologies, equipment and other products containing new knowledge or solutions. They concentrate more than 90% of the world's scientific potential and control 80% of the world high-tech market, which is currently estimated at \$2.5-3 trillion and exceeds the market of raw materials and energy resources. After 15 years, it is predicted to reach \$4 trillion. The United States exports high-tech goods worth about \$700 billion. USA, Germany - 530 billion dollars. USA and Japan - 400 billion dollars. USD per year.

**Economic barriers** One of the main obstacles to the introduction of innovations is the high capital intensity of mining and metallurgical production. Lack of investment, limited financial resources and the difficulty of attracting external financing create serious obstacles to the modernization of enterprises.

**In** addition, the lack of the necessary competencies and qualified personnel in the field of high-tech solutions is a serious barrier to innovative development. The lack of modern research centers capable of developing and adapting innovative technologies to the needs of the industry exacerbates the problem.

**However** , many enterprises have a low level of innovation culture, bureaucratization of processes and resistance to change on the part of personnel. The lack of effective coordination mechanisms between scientific institutions, government agencies and industrial enterprises also reduces the pace of innovation.

**Environmental and regulatory constraints** Modern environmental requirements require significant investment in technologies to reduce emissions and waste. However, the implementation of such solutions is often associated with high costs and insufficient government support.

**Promising solutions.** To overcome the identified problems, it is necessary:

- Development of public and private programs for financing innovative projects in the mining and metallurgical industry;
- To stimulate research activities and strengthen the interaction between industry and science;
- Staff training and implementation of retraining programs;



- Development of effective mechanisms of state support and simplification of regulatory and legal procedures;
- Introduction of digital technologies and automated production management systems.

Innovative activities of mining and metallurgical plants are an important factor in the sustainable development of the industry. However, the existing economic, technological and organizational barriers require a comprehensive approach to overcoming them. Only with the active support of the state, the scientific community and business is it possible to successfully introduce innovations and increase the competitiveness of the mining and metallurgical industry.

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