

EXPERIENCE IN THE USE OF TECHNOLOGICAL EQUIPMENT IN THE PRODUCTION OF BUILDING MATERIALS

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Abstract: This scientific article analyzes the experience of using technological equipment in the production of building materials. The role of technological equipment in production efficiency, product quality and environmental safety is analyzed in depth. The results achieved through the integration of digitization, automation, energy saving and artificial intelligence into the industry are highlighted. Innovative approaches are substantiated based on comparative analysis with foreign experiences.

Keywords: Construction industry, technological equipment, automation, energy saving, digital systems, production efficiency, environmental safety, industrial experience.

The modern construction industry is one of the important factors of economic development, and the rapid development of this industry directly depends on the type, quality and efficiency of the technological equipment used in it. Technological equipment serves as the main driving force in the production of building materials. They play an important role in increasing production efficiency, improving product quality, reducing labor costs and ensuring environmental sustainability. The experience of using modern equipment in technological processes shows that technological modernization is the key to introducing innovative approaches in the construction industry.

The technology of production of building materials consists of several stages, and special technological equipment is used at each stage. Each of the processes of raw material preparation, grinding, mixing, drying, synthesis, pressing, molding, roasting, cooling, storage and packaging is carried out using special machines and equipment. Experience shows that when modern, automated or digital equipment is used at each stage, production processes are optimized and the negative impact of the human factor is reduced. In particular, with the help of digital control systems that have become widespread in recent years, production efficiency has increased significantly.



High-pressure presses, autoclaves, vibro-pressing equipment, rotary kilns, mechanical separators, mixers and other equipment are widely used in the production of the main types of building materials - cement, brick, concrete, mortar, gypsum board, ceramic products and many other materials. Each piece of equipment has its own specific function, and it is important to choose the most efficient ones. For example, in the concrete mixing process, spiral mixers provide a much higher quality result than ordinary drum mixers.

Experience shows that technological equipment plays an important role not only in the production process, but also in the stages of analyzing raw materials, determining their quality and composition, and testing finished products. For example, laser granulometry technology can determine the particle size of raw materials, which is important for the quality of the final product. In addition, automatic weighing and dosing systems allow for accurate material consumption, which reduces waste and reduces production costs.

When selecting technological equipment in the production of building materials, their reliability, energy efficiency, ease of maintenance, and environmental safety should be taken into account. Otherwise, they can lead to negative results in long-term production. Experience in this regard shows that enterprises equipped with energy-saving technologies are not only economically profitable, but also comply with environmental standards. In particular, systems operating on the basis of thermal energy recycling have been widely introduced in recent years.

In recent years, with the introduction of industrial robotics and artificial intelligence technologies into the building materials industry, production automation has reached a higher level. Today, some large factories operate on the basis of fully digital systems. For example, using the PLC (Programmable Logic Controller) system, it is possible to control an entire production line. This reduces the need for human resources, reduces the number of errors, and ensures the stability of product quality.

In the experiments related to technological equipment, timely and correct maintenance is also of great importance. Any equipment needs constant monitoring and care for long-term operation. Therefore, the presence of special technical maintenance departments and the establishment of a service center at production enterprises guarantee the continuity of production. Another important aspect



identified on the basis of experience is the availability of constant spare parts for equipment and the creation of the possibility of their quick replacement. Otherwise, production may stop.

In addition, equipping technological equipment with modern monitoring and diagnostic systems allows you to identify possible malfunctions during their operation in advance. This significantly reduces the number of emergencies and increases production stability. For any enterprise, uninterrupted production is one of the main factors.

In-depth study of experiments related to technological equipment in the production of building materials is considered one of the important factors in increasing production efficiency. In this regard, it is of strategic importance to study foreign experience, adapt advanced technologies to local conditions and implement them in accordance with local needs. In particular, advanced technological experiences in the building materials industry of countries such as Germany, Japan and South Korea can also be used in the Uzbek industry. In conclusion, the experience of using technological equipment in the production of building materials shows that any technological modernization carried out in this direction contributes to increasing product quality, reducing production costs and ensuring environmental sustainability. This is an important tool for ensuring the competitiveness of the industry and strengthening its position in the international market.

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