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## INCREASING THE EFFICIENCY OF TECHNOLOGICAL PROCESS OF LOADING ROLL MATERIALS IN CUTTING DEPARTMENT OF SEWING PRODUCTION

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The difficult conditions of modern times, significant reduction of labor resources and a decrease in the level of their professional qualification necessitate an increase in the level of mechanization and automation of production processes at light industry enterprises [1].

One of the most important and at the same time the most labor-intensive stages of the technological process of manufacturing products at sewing enterprises is the preparation of materials for laying and their subsequent cutting. Modern equipment used to perform these operations is automated laying complexes, which are characterized by high speed, accuracy and ease of use [2]. However, their disadvantage is the high cost of integration.

In modern automated laying complexes, such labor-intensive processes as winding and unwinding rolls of material, as well as controlling their edges, are performed automatically. The use of such equipment helps to reduce the amount of waste generated, increase the economic efficiency of production and reduce impact of the human factor on the quality of finished products [3].

Sewing industry enterprises operate in conditions of fierce competition. The constant emergence of new materials, their processing technologies and the expansion of the product range necessitate a systematic search for effective technical solutions. One of these areas is the introduction of automated systems for loading rolls of materials into the laying complexes. Depending on the level of automation of the technological process of loading roll materials, it is worth highlighting several main categories of loaders [1].

Hand-held mechanised tools are used mainly in small sewing enterprises, where there is no need for a high level of automation. These include manual lifting mechanisms, with the help of which rolls are moved in horizontal and vertical planes. The main advantages of such equipment are simplicity of design and low cost of integration. At the same time, its disadvantage is low productivity with significant production volumes and the need for physical effort of the operator.

Semi-automated loading systems used in medium-sized enterprises. Equipment in this category is equipped with electric or pneumatic drives, which significantly reduces the physical load on employees and increases the efficiency of roll loading operations.

Automated loading systems with robotic manipulators belong to high-tech equipment, in which the process of loading rolls is carried out in a fully automatic mode. Such systems are advisable to use at enterprises with large production capacities, where the continuity of the production process and a high level of productivity are important. At the same time, the integration of such equipment requires significant capital investments.

Conveyor systems for transporting and feeding rolls provide movement of materials from the storage area to the laying area. They can be integrated with robotic or loading devices, which allows to create an automated roll transportation system. Such systems are most often used in enterprises with large production volumes, where the speed of material loading plays a key role.

Comprehensive roll storage systems with an automated feeding function are the most technologically advanced solution. They are easily integrated with automated laying complexes and provide precise positioning of rolls and synchronization of all stages of the technological process. Such systems are integrated mainly at large enterprises of the industry, focused on mass production and international market.

The use of roll loaders as part of automated laying complexes allows for significant increases in labor productivity, reduced equipment downtime, and minimized health risks for employees [4]. Various options for automating of the roll loading process allow enterprises to choose technical solutions based on production scale, level of automation, and economic opportunities.

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