MEASURING THE SURFACE AREA OF PATTERNS IN PRODUCT MANUFACTURING

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Abstract. *In order to reduce the cost of production and increase the profitability of production, it is an important task for enterprises producing garments to reduce waste during cutting. Saving the shape of the fabric depends primarily on the correct measurement of its dimensions for a given style. The shape of each detail of the garment consists of complex and curved contours, which makes calculating its dimensions quite difficult. It is impossible to prepare the dimensions of even the smallest details of the garment without accurate measurements.*

Keywords: *Product, pattern level, clothing details, production, fabric, style, item, experimental workshop, enterprises, fashion designers, designer, fabric shape, tailoring product, technology, new models.*

Introduction. After our country gained independence, along with all other sectors, serious changes took place in industrial production. In particular, work was carried out to reconstruct light industry enterprises, equip them with modern equipment and machinery, apply advanced technologies, build production lines that produce a large amount of products in a short time, and mechanize and automate them.

The initial stage of organizational and technical preparation of production is the creation of a model of clothing. New types and models of clothing are produced in the Fashion House, as well as in the experimental workshops of large sewing enterprises. The main tasks of the experimental workshops at the enterprise are: improving the technology of clothing, its individual components and production; preparing models for production;

testing the technology of new models and preparing recommendations for the use of new equipment; monitoring the technological processes of producing new models; standardizing the materials and accessories used for each model. The following groups work in the experimental workshop when creating a product: Modeling group, Designer group, Standardization group, Size reproduction group, Size surface determination group, Experimentation group, Product remanufacturing group.

Materials and methods. A group of pattern makers develops new product models. Designers determine each part of this model and create pattern pieces. The pattern making group calculates the fabric allowance for one model and documents it. The pattern making group draws and reproduces patterns on the provided cardboard at a scale of 1:1. Each cut contour line is marked with a different type of paint with a width of 0.1-0.2 cm. Stamps are placed on each cut side. The pattern surface is determined by various methods, for example, using special measuring machines, weighing methods, and calculation methods. In the experimental workshop of the sewing enterprise, all the recommended sizes and dimensions for the new model are prepared. Patterns are mainly divided into three types: standard patterns, working patterns, auxiliary patterns, and additional patterns. Standard patterns are mainly used for copying and reproduction, they are often called originals - original copies and are the standard for the design of all clothing details. Working patterns are used for cutting out details and making folds, they are mainly prepared in five sets: two in the experimental workshop to determine the fabric consumption rate, one in the preparation workshop to make folds, two in the cutting workshop to cut out defective fabrics and sew up places where folds have flown. Patterns are made of 0.9–1.2 mm thick cardboard. Auxiliary patterns are used to draw auxiliary lines and make marks with chalk or pencil when preparing details for sewing. Additional patterns are used to smooth and trim clothing details on a tape cutting machine. When preparing patterns, certain requirements must be met. After the patterns are ready and cut , their edges are rounded and marked; the direction of the weft and weft threads is drawn on the pattern; the model number and size are written on all patterns. The working and auxiliary patterns are checked and marked by the technical control department and are checked against the pattern once or twice a month; since they may be damaged as a result of cardboard drying, the reference patterns are also checked once a quarter according to the measurement table. As is known, the cost of the fabric is 80-90% of the cost of a garment product. In order to reduce the cost of the product and increase the profitability of production, it is necessary to reduce waste during cutting and save materials. Saving the shape of the fabric depends primarily on the correct measurement of the surface of its patterns for a given style . The shape of clothing details is often complex and consists of curved contours. Calculating its surface is quite difficult. There are several methods of calculating the level of measurements: Geometric method, Method of weighing measurements, Mixed method, Pitra scattering method, Photoelectronic machine calculation method. In the geometric method, each pattern level

is divided into small geometric shapes, and they are calculated separately. The obtained results are collected and the model level is determined. However, this method takes a lot of time to measure the level . The method of weighing the dimensions, after the dimensions are cut out of the cardboard, they are weighed on the scale . There are two methods of weighing on the scale: to find the absolute weight, all the dimensions of the clothes are weighed individually and their weights are added. To find the relative weight , all standards are weighted together to determine the total weight. Then, a piece of cardboard, size 10 cm x 10 cm, i.e. 100 cm ^{2,} is cut, its weight is measured, and the level of standards in relation to this surface weight is determined by the following formula:

$$S_a = \frac{Q_a \cdot S_b}{Q_b} sm^2$$

S_a – the total level of assumptions,

S_b – surface area of a piece of cardboard,

Q_a is the total weight of standards,

Q_b is the weight of the piece of cardboard.

This method is quite simple and easy, but for accurate results, all the dimensions should be cut from the same cardboard. In the mixed method, most of the dimensions are found in the form of rectangular surfaces, and the surfaces of curved parts are measured with a planimeter. The method of calculating the dimensions on a photoelectronic machine is more appropriate.

Conclusion. One of the requirements of production, aimed at producing high-quality clothing with minimal labor and material consumption, is economy, which is characterized by the costs associated with technological, constructive and technical preparation of production, as well as the costs of its use by consumers. Therefore, errors made in measuring the dimensions in the production of a product ultimately lead to an increase in the cost of the product, which cannot but affect the requirements of consumers.

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