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FEATURES OF THE MANUFACTURE OF PRIORITY AND IN-DEMAND CLOTHING WITHIN THE FRAMEWORK OF THE FORMED TORUS. MESSAGE 1

Abstract: In the article, the authors, based on their research, formulated the so-called "recipes" for creating conditions under which the clothing enterprises of the regions of the Southern Federal District and the North Caucasus Federal District would be able to produce competitive and popular products. Such a solution is possible if the heads of enterprises and regional branches of government in these regions combine their efforts through the use of innovative technological processes based on universal and multifunctional equipment to provide production with mobility, flexibility and the ability to maneuver the price of products that will be in demand not only in domestic markets with unstable demand, but also to be in demand abroad.

Key words: quality, preferences, demand, competitiveness, market, profit, demand, buyer, manufacturer, financial stability, sustainable TEP, priority, assortment policy, economic policy.

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Introduction

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The general weakening of the Russian light industry as a result of the collapse of production in the early 1990s and the simultaneous growth of the market due to the massive influx of cheap imports, which still prevails at the moment, determine for the existing domestic enterprises of the Southern and North Caucasian Federal Districts the relevance of the problem of forming a competitive assortment of children's clothing, which leads to the development of recommendations for the development of an optimal

strategy for the production of products in demand by the population of these regions.

In the light of the current foreign policy situation, due to the influence of economic sanctions imposed by many developed countries against Russia, the issues of increasing the competitiveness of Russian products to ensure reasonable import substitution, as well as to realize opportunities for the development of their own productions, are of particular importance.

The object of this study is the processes of developing solutions that ensure the release of modern

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demanded products. The subject of the study is clothing for children of the preschool age group.

The purpose of the research is to find opportunities to increase the competitiveness of children's clothing produced in the regions of the Southern Federal District and the North Caucasus Federal District. To achieve this goal, the following tasks are supposed to be solved:

- studying the possibilities of filling the Russian market with children's clothing of a domestic manufacturer and comparing them with the current directions for the implementation of the Strategy for the Development of Light Industry;

- assessment of the needs of the regional markets of the Southern Federal District and the North Caucasus Federal District to meet the demand for Russian-made products;

- study of the features that influence the formation of the assortment of children's clothing and the solution of issues of demand and sale of clothing for children, as well as the requirements for children's clothing;

- development of effective recommendations for the formation of a popular assortment of clothing for children, taking into account the identified features;

- development of proposals for increasing the flexibility of technological processes at enterprises.

The theoretical and practical significance of the research is determined by: segmentation of the consumer market for children's clothing in the Southern Federal District and the North Caucasus Federal District; identification of criteria that determine the quality of children's clothing in the eyes of consumers in the regions of the Southern Federal District and the North Caucasus Federal District; determination of the features of the product range and the parameters that determine the demand for it; a system for forming an assortment of children's clothing, which can become the basis for the assortment policy of children's clothing manufacturers in the Southern Federal District and the North Caucasus Federal District; conditions for the development of small and medium-sized manufacturers of children's clothing in the South.

The research was based on an integrated systematic approach to solving problems in the field of developing a competitive range of clothing intended for children of the preschool age group using the capabilities of modern information technologies. In the course of the research, the method of deductive assessment of the state of the economy and the work of light industry in the regions under consideration was used, as well as the method of questioning to take into account the opinions of consumers when predicting the range.

In a growing market dominated by imported products of stable demand for modern Russian enterprises of the Southern and North Caucasian Federal Districts, the problems of forming a

competitive assortment of children's clothing based on marketing information and studying regional characteristics of consumer demand are relevant. Managing the competitiveness of products is associated with frequent changes in the range and the increased influence of regional socio-economic factors, its increase is possible only through the development of new models based on constantly updated marketing information and in-depth study of the preferences of specific customer groups, accelerating the process of changing the range while maintaining or improving efficiency production system. Manufacturers need to move away from price competition.

A competent assortment policy is needed for the production of competitive children's clothing, taking into account the factors affecting its consumer demand:

- compliance with the main fashion trends,

- take into account the economic, social and climatic features of the regions of the Southern Federal District and the North Caucasus Federal District;

- application of innovative materials;

- if possible, create a basis for a wealthy consumer to meet his demand for higher quality clothing.

The formation of a range of children's clothing is a set of issues related to specific products, their individual series, with the definition of the relationship between "old" and "new" goods, single-piece and mass-produced goods, "high-tech" and "ordinary" goods, embodied goods and production methods. When forming the assortment, there are problems of prices, quality, guarantees, service, whether the manufacturer is going to play the role of a leader in the creation of fundamentally new types of products or is forced to follow other manufacturers.

The formation of the assortment is preceded by the development of an assortment concept by the enterprise, which is a directed construction of the optimal assortment structure, product offer, while on the one hand, the consumer requirements of certain groups (market segments) are taken as the basis, and on the other hand, the need to ensure the most efficient use of raw materials by the enterprise, technological, financial and other resources in order to produce products at low cost.

The assortment concept is expressed as a system of indicators characterizing the possibilities for the optimal development of the production assortment of a given type of goods. These indicators include: a variety of types and varieties of goods (taking into account the typology of consumers); the level and frequency of updating the assortment; the level and ratio of prices for goods of this type, etc.

The system for forming an assortment of children's clothing includes the following main points:

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- determination of the current and prospective needs of buyers, analysis of the characteristics of consumer behavior in the relevant market;
- assessment of existing analogues of competitors;
- a critical assessment of products manufactured by the enterprise in the same range from the position of the consumer;
- deciding which products should be added to the assortment and which should be excluded from it due to changes in the level of competitiveness;
- consideration of proposals for the creation of new product samples, improvement of existing ones;
- development of specifications for new or improved models in accordance with customer requirements;
- study of the possibilities of production of new or improved models, including questions of prices, cost and profitability;
- carrying out tests taking into account possible use in order to determine their acceptability in terms of the main indicators;
- development of special recommendations for the production departments of the enterprise regarding quality, style, price, name, packaging, service, etc. in accordance with the results of the tests carried out, confirming the acceptability of the product characteristics or predetermining the need to change them;

- Evaluation and revision of the entire range.

Of particular importance in such a situation is the role played by certain positions of the assortment. For this, the products can be classified into the following groups:

- the main group of goods (which bring the main profit and are in the growth stage);
- supporting group of products (products that stabilize sales revenue and are in the stage of maturity);
- a strategic group of goods (goods designed to ensure the future profit of the company);
- tactical group of goods (products designed to stimulate sales of the main product group and are in the stage of growth and maturity);
- a group of products under development (products that are not present on the market, but ready to enter the market);
- goods leaving the market (which do not make a profit and they must be removed from production, withdrawn from the market).

After that, it is necessary to determine the share of each group in the total volume of products, which makes it possible to evaluate the existing assortment set at the enterprise and, correlating it with the profit received, assess the correctness of the assortment planning, its balance. For a stable position of the enterprise in the assortment structure, the main and supporting groups of goods must be at least 70%. In addition, not always an increase in the volume of

goods of groups that bring the main income will increase the profits of the enterprise. Here it is important to pay attention to the balance of unsold goods (what increase it will give and the possibility of its further sale).

Care must be taken to ensure that the range of children's clothing offered does not include too many product items. For the majority of Russian enterprises, the main reserve for optimizing the assortment is still based on a significant reduction in the assortment range. Too large assortment has a bad effect on economic indicators - there are many positions that, in terms of sales, cannot even reach the breakeven level. As a result, the overall profitability falls sharply. Only the exclusion of unprofitable and low-profit items from the assortment can give production an increase in overall profitability up to 50%. In addition, a large assortment dissipates the strength of the enterprise, makes it difficult to competently offer goods to customers, and disperses the attention of end consumers.

The research data of psychologists indicate that the average person is capable of simultaneously perceiving no more than 5 - 7 (sometimes up to 9) semantic constructive solutions. Thus, a person, making a choice, first selects these same 5-7 options based on the same number of criteria. If the seller offers too many selection criteria, the buyer begins to experience discomfort and independently weeds out criteria that are insignificant, from his point of view, which often leads to the cancellation of the purchase or to the choice of an outdated (familiar) model. From the buyer's point of view, to ensure a calm choice of perceptible options, the assortment should consist of no more than 5 - 7 groups of 5 - 7 items, i.e. the entire assortment from the point of view of perception should optimally consist of 25 - 50 items.

It is generally accepted that the buyer needs a wide range. This widest range is often referred to even as a competitive advantage. But in reality, it turns out that for a manufacturer, a wide range of products is hundreds of product items, and for a consumer, 7 items are already more than enough. Consequently, the consumer does not need a wide assortment at all, but the variety necessary for him.

An important feature that influences the formation of an assortment of children's clothing by an enterprise is market segmentation, i.e., activities to identify potential consumer groups for specific types of goods. Segmentation focuses on the differences in the behavior of different types of buyers in their respective markets. At the same time, the target segment is understood as a homogeneous typical group of buyers with similar needs and habits in relation to certain types of goods. The result of segmentation is the specification of types of consumers in a given market. For enterprises, customer segmentation is the basis for adjusting the

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existing assortment structure or for developing new models. Besides,

The choice of the optimal range of clothing for children, most in demand by the population, meeting the current fashion and quality requirements adopted on the international market, is a necessary condition for the effective operation of the enterprise. The formation of a range of children's clothing, taking into account its competitiveness, is a process carried out taking into account the analysis of the existing market, as well as taking into account the forecasting of trends in the social, economic and industrial fields.

The formation of the assortment is preceded by the development of an assortment concept by the enterprise, i.e., the directed construction of the optimal structure of manufactured products, while on the one hand, the need to ensure the most efficient use of raw materials, technological, financial and other resources by the enterprise in order to produce products with low costs, and on the other hand, meeting the requirements of certain consumer groups, taking into account their characteristics and capabilities.

The assortment policy for the creation and production of competitive children's clothing, taking into account current marketing approaches, is based on a group of principles based on an understanding of the need to develop only what the consumer needs. Even when developing products that have no analogues, while having only potential demand, it is necessary to carry out a set of measures to determine the needs for it:

- produce test batches, organize meetings with private and public consumers;
- create a variety of assortment within the framework of product-differentiated marketing;
- before the introduction of the model into production, the market segment for which it is intended within the framework of target marketing must be determined;
- it is necessary to predict the properties of the product during operation.

Thus, the choice of assortment policy is considered as a component of the strategic planning process. The choice of strategy depends, first of all, on the resources of the enterprise - when developing an assortment, there is a high probability of dissipation of funds.

Assortment planning and management is an integral part of marketing. Even well-thought-out sales and advertising plans will not be able to neutralize the consequences of mistakes made earlier

in assortment planning. The optimal assortment structure should ensure maximum profitability, on the one hand, and sufficient stability of economic and marketing indicators (in particular, sales volume), on the other hand.

Problems of demand and sale of clothes intended for children.

Main part

The existing state support measures are designed to ensure the financial stability of enterprises. However, manufacturers also need to make serious efforts to improve the quality of their products, because it is the availability of goods that are competitive in quality and cost that is the best stimulator of consumer demand. The range of children's clothing is shown in Figure 1.

In market conditions of management, an effective management system requires a rational organization of marketing activities, which largely determines the level of use of the means of production at the enterprise, the growth of labor productivity, the reduction in production costs, the increase in profits and profitability. This is due to the fact that marketing activity is not only the sale of finished products, but also the orientation of production to meet the effective demand of buyers and active work in the market to maintain and form demand for the company's products, and organize effective channels for the distribution and promotion of goods.

An effective tool for maintaining high demand for the products manufactured by the enterprise is marketing, the initial stage of which is the study of market opportunities and the assessment of financial investments. Marketing research gives the company an idea of the differences of customers in their needs, perceptions, preferences.

At the enterprise, the marketing service must closely monitor the dynamics of sales and profits in order to take appropriate measures in time. So, for example, with a decrease in the pace of sales, you need to think about new markets, adjusting the price of the manufactured assortment, and improving service. Every company needs a policy that should be based on an assessment of its real capabilities, so that any new samples of children's clothing brought to the market serve as its position and competitive advantage. As part of a product strategy, specialists determine market demands and ways to satisfy them, based on a study of consumer demand and its characteristics.

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Figure 1. Characteristics of the range of clothing for children

The activity of the garment enterprise is carried out in a constantly changing economic environment with one goal - to maximize profits. In a market economy, when prices and production volumes are dictated by the market, an enterprise always faces a choice of how many products to produce at the prevailing market price in order to obtain the desired profit. To properly plan a marketing strategy, you first need to analyze the current situation, understand your own resources, and then look for ways to achieve your goals. On the one hand, this is a thorough study of the market demand and needs, orientation of production to these requirements, on the other hand, an active influence on the market, on the formation of needs and consumer preferences.

To create a competitive advantage in terms of marketing, an enterprise must analyze the existing requests from potential consumers and determine what is of greatest importance to them. This also requires the use of a set of marketing techniques: branding, participation in industry exhibitions, the use of various advertising options, assortment policy. Equally important to maintaining the sustainable development of the children's clothing industry is to determine the economic life of the model and optimize the life of the product through rational pricing and the correct application of marketing techniques.

In addition, in order to avoid problems with implementation, the creation of new models in the design departments of the enterprise should be carried

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out after a preliminary study of the real market needs for these products. After all, as the experience of Russian enterprises shows, the main cause of the sales crisis is the inconsistency between the range of manufactured products and the structure of consumer demand. In most cases, domestic producers tend to sell what they produce rather than produce what can be sold. This is due to the fact that for most of them the problem of sales orientation is more relevant than marketing. This situation can be explained by the following reasons:

- commodity producers are forced to concentrate their efforts on the product, and not on the needs of consumers, as they have very limited investment opportunities;

- a wide product range is possible in the presence of flexible industries, the introduction of which is constrained by technological backwardness;

- in order for the production program to be determined by marketers, it is necessary not only to have flexible production, but also to have significant production reserves, including reserves of production capacities, financial resources, etc.;

- the possibility of using market equilibrium prices and the advantage of non-price methods of competition for domestic producers are limited by the lack of professional marketers;

- the relatively narrow planning horizons for our businessmen are determined by the still remaining economic and political instability of Russian society.

This also explains the price orientation of the business to maximize current profit, its concealment for taxation, and not to obtain a long-term effect from the market orientation of production.

The company takes care of its costs, developing measures to reduce them by improving equipment and technology, introducing new types of materials into production, constantly improving the quality of products - all this requires large financial costs, but, nevertheless, helps to increase the competitiveness of both individual types. products and the company as a whole. With the transition from a seller's market to a buyer's market, the competitiveness of an enterprise increasingly depends on how perfect and viable its marketing and sales are. Only knowing the true demand for specific types of children's clothing can allow businesses to provide an appropriate supply.

Demand, supply and prices are elements of the market mechanism. Production, in essence, is the link between supply and demand, which acts as a result of production activities and is a batch of children's clothing intended for sale, the price of which must be sufficient to reimburse all costs (fixed and variable) for its production, management, implementation, and ensure an acceptable return on investment.

Consumer demand acts as the main factor influencing the formation of the assortment, which, in turn, is aimed at maximizing the expansion and satisfaction of the demand of the population.

Demand factors include:

- Comparative competitive advantages (the product must have distinct features or distinct advantages in comparison with analogues, products or services of competitors existing on the market);

- social orientation (it is necessary that the product fits into the existing social conditions, so that the proposed product corresponds to the current lifestyle and value system of the consumer);

- the ability to satisfy the consumer (the product must perform all the functions to meet the key needs and requests of the buyer).

The nature and possibilities of mutual adjustment of supply and demand are determined by the ability of these factors of the market mechanism to influence changes in the price level of retail goods and commodity groups. The quantitative side of this dependence is expressed by the concept of price elasticity of supply and demand, which is understood as the degree of the corresponding response of supply and demand to a relative change in the level of the market price.

Increasing the competitiveness of manufactured children's clothing is possible only through the development of new models based on marketing information and in-depth study of the preferences of specific groups of buyers, accelerating the process of changing the assortment while maintaining or increasing the efficiency of the production system.

If the business is to be successful in the buyer's market, it must conduct business in such a way that it does not depend on the sale of what it can make, but on the production of what it can sell at a profit. Under these conditions, it is necessary to manage the enterprise, focusing on the market, and not on the product. At the center of this way of thinking is the customer with his desires and expectations, which should be satisfied as fully as possible.

Today, a light industry enterprise, striving not only to survive, but also to develop, requires the ability not only to competently exploit the available technologies, but, first of all, to actively position itself in the market, delivering high-quality products that meet the requirements, requests and expectations of consumers in a short time. minimum price. In other words, at the present time, the one who will quickly launch products on the market that most fully meets the requirements of consumers, while ensuring the minimum cost of its production, will "survive" at the present time. To do this, the company needs:

- understand both current and future customer preferences and be able to develop products that meet these preferences;

- to ensure the adjustment of technological processes of production, guaranteeing their minimum cost by identifying and eliminating all types of costs that do not bring product value;

- Bring your products to market ahead of your competitors.

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The implementation of these tasks will depend on how smoothly and efficiently all departments will work at the enterprise. This can be achieved through a quality management approach according to the international standard ISO 9000:2015:

- determination of a set of processes or activities that ensure the production of products with quality characteristics that meet the requirements, requests and expectations of consumers;
- establishing a clear and understandable interaction between the processes;
- definition of quality objectives at the level of the enterprise and departments, providing an understanding of the results that must be achieved by departments, and which ensure the achievement of the overall goals of the enterprise;
- planning resources needed to achieve goals;
- determination of procedures that ensure the performance of work in departments in the most efficient way;
- measuring the results and comparing them with the set goals;
- analyzing and deciding what needs to be improved within each department.

The implementation of these actions will make it possible to form an enterprise management system that focuses it on the production of products that meet the requirements, demands and expectations of consumers in terms of their characteristics and adjusts all types of activities related to ensuring production to an efficiency indicator, providing:

- building a system for identifying cost sources and developing adequate measures to reduce them;
- formation of reliable data demonstrating the effectiveness of the use of invested investments, which can help attract new investors;
- reducing the cost of production, which makes it possible to reduce the price, expand the market and increase production volumes;
- cost reduction, mainly associated with a reduction in the amount of scrap and other types of waste, which has a positive effect on such performance indicators of the enterprise as the impact on the environment, the state of industrial safety; the image of a socially oriented enterprise is formed;
- a clear setting of goals and objectives for each employee, determining the result that should be obtained in the performance of work;
- determination of the resources needed to perform the work, and provision of resources;
- providing the knowledge and skills necessary to understand how the work should be done in order to ensure its maximum efficiency;
- measuring the results of work at the level of employees, departments and the organization as a whole and comparing the results with goals;
- analysis of the results and adequate response to them through a system of corrective and preventive actions.

As world practice shows, the ability to implement these processes at the level of top management creates the conditions necessary for the formation of a competitive enterprise, ensuring the economic stability of enterprises.

In recent years, researchers have noted a growing trend in consumer preferences towards the quality, availability and safety of products for children, and yet relatively recently, the main guideline for most buyers was the price. Thus, one can judge the growth of the culture of consumption along with the growth of incomes of the population, which naturally leads to an increase in demand for branded products as of better quality in the eyes of parents.

Based on this, large manufacturers of children's clothing in the Southern Federal District and the North Caucasus Federal District should start developing lines of high-quality clothing in a more expensive segment under their own brand. Demand for such products will be stable, but so far only in regional centers and other developed cities. This will be facilitated by the growing interest and confidence of consumers in domestic products from year to year, due to its compliance with much more stringent regulatory requirements for the manufacture of children's things and, as a result, higher quality compared to many imported goods, which often turn out to be extremely harmful to the health of children and inappropriate for climatic conditions. For the same reasons, many Russian manufacturers are increasingly competing with foreign ones in the middle price segment,

Another argument in favor of the development of Russian brands is the stable development of modern civilized trade formats, where, as a rule, original products of a certain price category and quality level are sold. As mentioned above, the well-being of the population, its consumer culture is growing, which in the near future will attract consumers to well-equipped stores, children's centers, etc., and not to open markets, fairs, etc. At the same time, increasing the purchasing power of the population of the regions against the backdrop of saturation of the markets of the largest cities, it allows us to talk about the future development of the entire market of children's goods, mainly due to regional markets.

E-commerce is becoming increasingly popular as a powerful, and most importantly, consumer-friendly means of developing product recognition. The audience of Internet users and their trust in this sales channel are growing, for many of them it is more convenient to buy things that do not require fitting (and it is difficult to make a mistake with children's sizes) on the Web, which significantly saves time and money.

Many manufacturers, not wanting to depend on the conditions of retailers, come to create their own mono-brand distribution networks that increase their own profitability. At the same time, the popularity of developing such networks in the form of a franchise is

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growing, which, with sufficient brand awareness, is a mutually beneficial event for both the franchisor and the franchisee. In this case, the main advantage of developing children's goods stores under a franchise is the wide distribution of the brand with a certain minimization of the risks and costs of opening stores. There is a reduction in costs, profit pooling, organized logistics, a single circle of professionals of different levels, as well as common advertising budgets.

Thus, there is an increase in market diversification: more and more non-specialized retail chains include groups of goods for children in their assortment. The struggle for the consumer is intensifying: loyalty programs are expanding, segmentation of the assortment matrix is more often manifested in favor of popular goods and, in parallel, a cheaper basic assortment, more attention is paid to the location and format of the store, its marketing support. When developing the assortment, interior, choosing colors and equipment for the store, the interests of both children of different age groups and their parents are taken into account, preference is given to the harmonious design and design of the trading floor, and the organization of a special play area.

Experts note a possible increase in the number of children in the coming years or a slight decrease in growth. Priority segments where a high growth of domestic production is likely include: clothes for newborns, functional and bed linen, hosiery, knitwear, as well as school uniforms.

Analysis of the requirements for children's clothing.

In market conditions, the interests of the seller and the buyer are directly opposite: one is characterized by the desire to make a profit, the other is to save on direct costs, but there is always a common point of contact in their relationship, called the quality of the goods. For a conscientious seller, especially if he represents the interests of the manufacturer, the quality of the product determines its reputation in the market, while the buyer, naturally, tends to maximize the utility of the purchased product, largely due to its quality. Thus, the quality of the goods is the core of the normal interaction between the seller and the buyer, informing their relationship of trust and guaranteeing the mutual benefit of these relations.

For manufacturers, the catchphrase: "The future in which there is nothing to do without quality has already arrived" best reflects the importance of timely response to changes in market conditions and adequacy in the placement of accents within quality relationships. Even large investments may not save the enterprise if it cannot ensure the competitiveness of its products, the basis of which is quality. It is quality that consumers prefer when choosing products, it is also one of the most important criteria for the functioning of an enterprise in a relatively saturated market.

The situation in the market of light industry goods is characterized by the transfer of "power" into the hands of consumers. Namely, consumers determine the "winners" in the fierce competition with their choice.

The condition for the consumer to choose a product in a large assortment offered on the market is the coincidence of its technical parameters with the conditional characteristics of the forecasted demand. From this point of view, the enterprise management strategy should be built on the principle of a "tracking system" with feedback, i.e. it should provide consumers with products that meet their specific requirements for quality and related service when it is sold, all the while monitoring the degree of such satisfaction (Figure 2).

Tracking the quality of goods and related services consists of two stages:

1) study through marketing of consumer expectations in the quality of products and services for its promotion; based on this information, functional specifications for new products and service quality are determined, which will depend on the ability to determine customer expectations and the ability to adapt production technologies to changing customer expectations;

2) periodic "measurement" of the mismatch between the actual and expected level of product quality and related services; in accordance with the magnitude of the mismatch, the activity of the enterprise should be aimed at developing control actions on organizational and technological units in order to reduce the discrepancy and introduce new methods for assessing quality parameters.

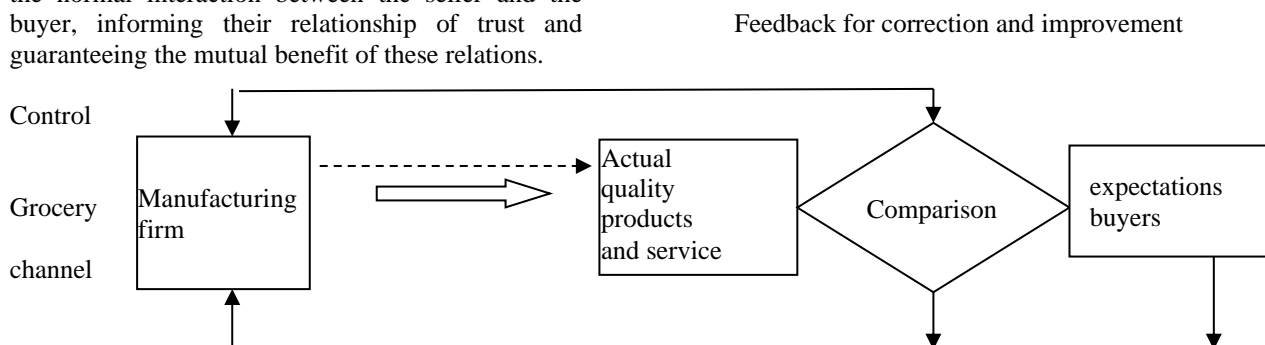


Figure 2. Customer Satisfaction System

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Ensuring the quality of children's clothing includes planning and conducting a series of activities to create conditions for the production of products that meet consumer requirements. When implementing these activities, the following are taken into account:

- factors influencing the formation of the quality of goods (study of the goods market, development of requirements for goods, quality of raw materials and materials, quality of design and engineering, manufacturing quality, quality of goods marking);
- factors that preserve the quality of goods (packaging, conditions of transportation and storage, sale and consumption (operation), technical assistance in maintenance).

The chemical composition and structure of the initial substances and materials predetermine all the basic properties of goods, divided by nature into physical, chemical, mechanical, biological. Taking into account this factor, all the others are formed: design, technology, etc.

The starting materials are simple and complex substances, characterized by an invariable chemical composition and certain properties. The indicators of these properties are density, temperature constants, spectral characteristics, etc., which form the basis for the identification of goods and various types of examination.

There is a certain functional relationship between the amount of an element or chemical compound and the measured physical quantity, which is used to directly characterize the consumer value of a material or product. The standards for the content of these substances are specified in the relevant regulatory documents.

An important factor is the influence of the components of the starting substances, in particular the functional groups that make up the molecules of the starting substances, namely:

- hydroxyl group ($-OH$) in the composition of cellulose fibers (cotton, linen) causes high hygroscopicity of 8–12%, good ability to be dyed, dependence of properties on humidity;

- carboxyl group ($-COOH$), amino group ($-NH_2$) in the composition of protein fibers (wool, silk, leather) provide good hygroscopicity - 11 - 16%, good dyeability, low electrification, the ability to form a network structure and, as a result, provide high fiber elasticity;

- amide group ($-NH$) in the composition of polyamide fibers (nylon, enanth, amid) causes low hygroscopicity - 4%, weak dependence of properties on humidity, mediocre dyeing, increased electrification;

- the ester group ($-COO$) in the composition of polyester (lavsan) and polyacrylonitrile (nitrone) fibers determines their zero hygroscopicity, poor dyeability, and high electrification.

Thus, knowledge of the chemical composition of raw materials makes it possible to predict the nature

of possible changes in finished products during storage and operation, as well as to identify goods.

Design is one of the most important factors that determine the quality of finished products. Design is the shape, size, method of connection and interaction of parts and assemblies, the relationship between individual elements, interchangeability, multi-operation and other features of the product. The design of children's clothing should best ensure functionality, ergonomics, aesthetics, reliability and safety in the use and operation of products.

Ergonomic properties - the ability of goods to create a feeling of convenience, comfort, the most complete satisfaction of needs in accordance with the anthropometric, physiological, psychological and psycho-physiological characteristics of the consumer. Ergonomic properties of children's clothing are divided into the following subgroups:

- anthropometric properties - the ability of goods during operation to correspond to the greatest extent to the measured characteristics of the child's body;

- physiological properties - the ability of goods to ensure the convenience of the functioning of individual organs or parts of the human body when they are used;

- hygienic properties are also associated with the influence on the living conditions of the human body and are divided into sorption (hygroscopicity, moisture loss), permeability properties (vapor, water, dust, light, air permeability), electrification (accumulation of static electricity charges), heat-shielding properties (thermal conductivity, heat capacity);

- psychological properties - the ability of goods to provide spiritual comfort to the consumer during operation, to correspond to his individual perception of the goods, which is especially important for young children;

- psychological and physiological properties - the ability of goods to ensure compliance with the psychological and physiological capabilities and needs of the consumer, these properties comprehensively satisfy the psychological and physiological needs of a person, are mainly characterized by organoleptic indicators.

For children's clothing, aesthetic properties are especially important - the ability of a product to express social values in sensually perceived signs of form and satisfy the aesthetic needs of a person: informational expressiveness, rationality of form, integrity of the composition, perfection of production performance and stability of the presentation.

Aesthetic needs are always individual, therefore, it is quite difficult to ensure the aesthetic properties of goods and evaluate them, but at the same time it is of considerable interest, especially when making clothes for children.

The indicators of the aesthetic properties of children's clothing are: appearance, integrity of the

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composition, design, fashion, style, information expressiveness, perfection of production performance, etc.

Appearance is a complex indicator, including the shape, color, surface condition, sometimes integrity, as well as the presence of drawings and inscriptions. For the aesthetic perception of different children's clothing, the significance of the listed individual indicators of appearance is not the same and depends on the characteristics of the types of this clothing.

The integrity of the composition reflects the rational relationship of external features with the internal structure and implies subordination to the main elements of secondary ones, the unity of the style solution of all parts of the products.

Design is the ability of goods to comprehensively satisfy aesthetic, ergonomic, social and other needs through their artistic design. Satisfaction of diverse needs and, first of all, aesthetic ones is achieved by a rational combination of appearance indicators (shape, color, surface condition, etc.) with dimensions and indicators of functional and ergonomic properties. So, the beautiful shape of the products should be combined with ease of use. The dimensions of the products as a whole or their individual parts must ensure the harmony of form and functionality.

Compliance with a certain style allows you to satisfy social and aesthetic needs with the help of a set of indicators of appearance, design features and details, which are determined by the general perception of the world for a particular segment of consumers. The style of goods, together with fashion, is an important means of creating the image of consumers and satisfying prestige needs as a kind of social needs.

Following fashion allows you to satisfy the aesthetic needs that have been formed or developed in a certain socio-cultural environment for a certain, limited period.

The fundamental features characterizing these properties are single indicators of appearance:

the shape of the products as a whole and / or its individual parts;

color and / or color scheme (this is especially true for clothes, shoes - the fashionable color of the season);

surface condition, including design details (for example, the presence of ruffles on dresses, blouses, accessories on shoes, etc.);

the presence or absence of individual functional details (for example, backs for shoes, sleeves, belts for clothes).

These fashion indicators are provided by selecting the most suitable types of raw materials, materials and developing a specific design.

Fashion is one of the important engines of scientific and technological progress, prompting fashion designers to create not only fashionable

goods, but also order the development of new materials and technologies.

The most important indicator of the quality of children's clothing is the safety of goods. Currently, in legislative acts, safety requirements are singled out as a special group as mandatory.

According to the Federal Law "On Technical Regulation", "the safety of products and related processes of production, operation, storage, transportation, sale and disposal is a state in which there is no unacceptable risk associated with causing harm to the life or health of citizens, property of individuals or legal entities, persons, state or municipal property, environment, life or health of animals and plants".

With regard to the quality of consumer goods, safety can be defined as the absence of an unacceptable risk to the life, health and property of consumers during the operation or consumption of goods. Unlike other consumer properties, the deterioration or loss of which leads to loss of functional or social purpose, non-compliance with the permissible level of safety indicators transfers products into the category of dangerous, subject only to destruction - on the contrary, products that have lost other consumer properties are classified as conditionally suitable and may be reworked. In addition, the lost properties of the product can be restored after the appropriate elimination of defects, so that it can be used for its intended purpose.

According to TR TS 007/2011, biological safety is the state of a product in which there is no unacceptable risk associated with harm to the health or life of the user due to a mismatch of microbiological, toxicological, physical and physico-chemical properties with the established requirements; chemical safety - the state of the product, in which there is no unacceptable risk associated with harm to the health or life of the user due to the excess concentration of chemicals harmful to the health of the user.

Compliance with chemical safety is especially important for clothes of the 1st layer that are in direct contact with the skin, since the ingress of dangerous substances into a child's fragile body can cause serious harm to health: cause allergies, metabolic disorders, sleep, the appearance of disorders of the nervous and cardiovascular systems, pain and other symptoms. Exceeding the MPC of toxic elements can cause poisoning of varying severity, sometimes even fatal.

Compliance of products for children and adolescents with TR CU 007/2011 is ensured by the fulfillment of its safety requirements directly or by the fulfillment of the requirements of standardization documents included in the List of documents in the field of standardization, as a result of which, on a voluntary basis, compliance with the requirements of this technical regulation is ensured.

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Ensuring the competitiveness of children's clothing in the domestic market and its promotion in the external market is impossible without the production of high-quality products that meet safety requirements. Given this, enterprises need to implement a quality management system (QMS), which should be systematically developed and supplemented over time. According to the concept of the ISO 9000:2015 standard, the combination of its various elements contributes to the effective management of production and the production of quality products at minimal cost. This, in particular, is the philosophy of the TQM (Total Quality Management) concept and, as a result, the high efficiency of the quality system at the enterprise. Under these conditions, the advantage will be given to the enterprise that can offer consumers the best quality at a lower price.

The QMS should ensure both the conformity of products to consumer requirements and the guaranteed identification and elimination of deficiencies in production processes that affect quality, i.e. provide the highest probability of the absence of defects.

The structure of the assortment of children's clothing is characterized by a significant variety in purpose, materials used, manufacturing technology, types, shape, cut, colors, finishes, etc., which is due to the peculiarities of the physical, psychological and physiological development of children at different ages.

Children's clothing is classified according to various criteria. A common classification is according to the following age groups:

clothes for children of the infant group - from birth to 1 year;
nursery group - 1 - 3 years;
preschool group - 3 - 6 years;
junior school group - 7 - 11 years;
senior school group (teenage) - 12 - 15 years;
youth group - 16 - 17 years. Other features of the classification of children's clothing are shown in Figure 2.

Based on the results of the analysis of the previously listed features of the formation of an assortment of children's clothing for consumers in the regions of the Southern Federal District and the North Caucasus Federal District, we have prepared some recommendations for developing an optimal strategy for the production of a sought-after and competitive assortment to revive demand for products of existing small or medium-sized industries, the number of which prevails in these regions, which cannot be said

about the volumes of their products in comparison with the small number of large industries, with which they are not able to compete at the moment.

The climatic features of the two neighboring federal districts - the Southern and North Caucasus are almost identical: most of the year in these regions there are positive air temperatures with an average annual - plus 6.5 °C. The mild climate determines the predominance of demand for the spring-autumn and summer assortment of clothing, which allows developing enterprises to focus primarily on the production of lightweight clothing. Therefore, taking into account the seasonality factor, as an example of the assortment in demand on this market, we will form an assortment of summer, light, everyday clothes for children of the preschool age group (as one of the most numerous groups, since there is an increase in the birth rate, and children grow up quickly), which is easy can be scaled and modified

The task of studying the characteristics of consumer demand for children's clothing is the main one for improving the quality and competitiveness of products. First of all, it is necessary to establish by what criteria the buyer evaluates the quality, since he will try to purchase clothes with the most desirable set of properties for him.

To study the requirements for the quality of children's clothing, and the criteria that determine in the eyes of consumers the competitive position of children's clothing and its choice when buying, we conducted a survey of buyers living in the cities of the Rostov region. More than a hundred respondents (women aged 20 to 45) took part in the survey, the results of which are shown in the figure.

The most important criteria for the respondents when buying children's clothing are: convenience (23%), high quality (18.8%) and moderate price (15.38%), followed by: appearance (11.96%), low price (9.4%), hygienic properties (6.84%), compliance with fashion trends (5.98%), company prestige (3.52%), advertising (2.56%) and warranty period (2.56%).

When developing or updating the assortment, enterprises should take into account not only their own capabilities, but also the presence of similar products on the market of competitors, as well as the preferences and capabilities of buyers in certain market segments. Table 1 provides information on the number of registered manufacturers of clothing for adults and clothing for children in the regions of the Southern Federal District and the North Caucasus Federal District.

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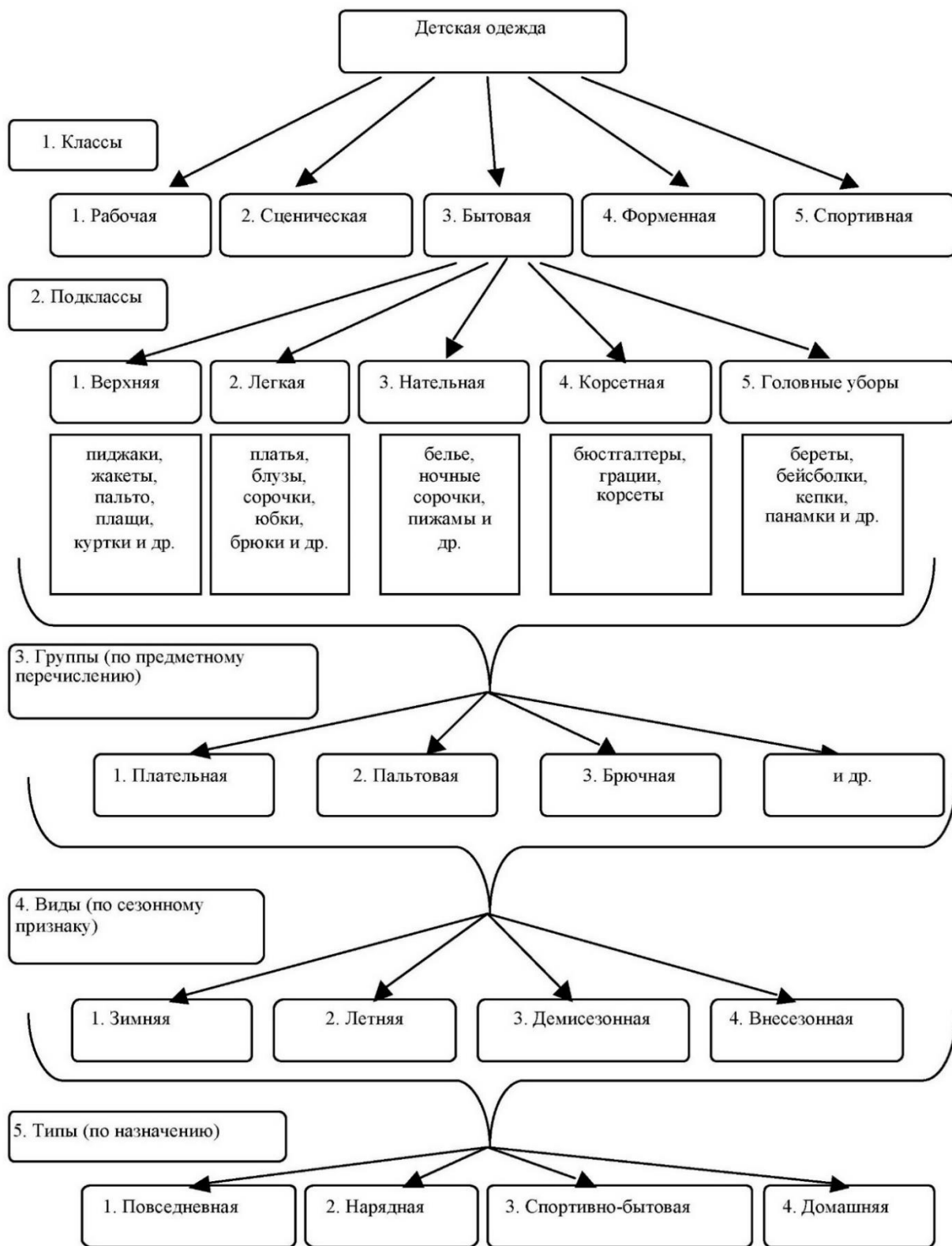


Figure 2. Classification of children's clothing

As can be seen from Table 1, there are significantly fewer manufacturers of children's clothing than adults in both districts, and their overall presence in this market, like the entire light industry,

is not able to cover the growing demand for legal Russian products, which in the Southern Federal District is satisfied by only 18.5%, and in the North Caucasus Federal District - only by 10.1%. One of the

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serious problems of the industry, hindering its development, is the high number of unregistered "underground" workshops that produce counterfeit goods. Therefore, due to strongly pronounced unfair competition, as well as the total predominance of imports for existing small and medium-sized enterprises in both districts, the main problem is the impossibility of producing competitive products that meet the needs of various social strata. After all, buyers differ from each other in a variety of ways: according to their needs, financial and other possibilities, location, buying views and buying habits. In this sense, the Southern and North Caucasian federal districts are of the greatest interest for market segmentation due to the homogeneity of the aggregate consumer, who equally reacts to the product and how it is evaluated for purchase.

It is also necessary to take into account the factor of solvency of buyers, based on which, you can focus on the ratio of consumer segments of this market. Table 1 provides information on the average income

per person in the regions of the Southern Federal District and the North Caucasus Federal District in 2019-2022.

The income data presented in Table 2 makes it possible to judge their relatively low level relative to the national average for most regions of the Southern and North Caucasian Federal Districts. As a result of segmentation, it was also determined that the population of the two districts is unevenly distributed over the territory. When forming the assortment, attention should also be paid to the high percentage of rural residents in the population structure - in the aggregate in the Southern Federal District and the North Caucasus Federal District it is 42.5%. Taking into account the above results of the survey, one can judge the expediency of bringing products of the medium and medium-low price segment to these markets, especially for small and medium-sized businesses. However, in order to create demanded products, enterprises need not only to expand and update the range.

Table 1. Average per capita cash income in the subjects of the Southern Federal District and the North Caucasus Federal District

Territory	2019	2020	2021	2022
Russian Federation	25 928	27 767	30 467	30 738
Southern Federal District:	21 842	24 328	25 459	26 519
Republic of Adygea	18 512	22 054	22 646	23 627
Republic of Kalmykia	11 311	12 398	14 230	14 758
Republic of Crimea	-	-	15 658	19 059
Krasnodar region	25 777	28 788	31 375	32 672
Astrakhan region	19 778	22 169	24 057	22 676
Volgograd region	17 590	19 056	21 719	21 465
Rostov region	20 995	23 355	26 558	27 228
Sevastopol	-	-	17 882	22 916
North Caucasian Federal District:	18 900	20 693	23 024	23 399
The Republic of Dagestan	21 717	23 423	26 738	28 348
The Republic of Ingushetia	13 821	14 346	14 713	15 106
Kabardino-Balkarian Republic	15 297	16 619	19 102	20487
Karachay-Cherkess Republic	14 664	16 109	17 268	16 937
Republic of North Ossetia-Alania	17 788	19 820	22003	21 964
Chechen Republic	17 188	19 788	22 917	22 451
Stavropol region	19 768	21 590	22 969	22 270

It is important to form an assortment policy for the manufacture of such an assortment of children's clothing in order to guarantee its demand and demand not only through pricing policy, but also providing consumers with comfort and preventing the occurrence of diseases and other ailments associated with design flaws, improper selection of materials and components. Unfortunately, today filling the market with imported products does not ensure the elimination of these problems, which is one of the

reasons for the need to implement an import substitution policy in order to ensure the demand of consumers of these entities, namely, in such clothing that would satisfy them in all aspects, and allow manufacturers to obtain stable technical and economic indicators with a guarantee of social protection of the population of these regions.

In summer, rather hot, mostly dry weather sets in in the Southern Federal District and the North Caucasus Federal District. Although the average

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monthly air temperature of the warmest month in the year of July is plus 23 °C, often for many days in places the temperature is above 35 °C and even above 40 °C. Often such weather is established already in May, it can last all of September. With this in mind, when developing an assortment, it is worth giving preference to clothes that are open, light, free, "breathable" - this should be facilitated by the use of modern high-quality materials in its manufacture, the basis of which should be natural fibers (cotton, linen, nettle, hemp, etc.) by adding the permitted share of

artificial fibers, as it decreases, the cost of the product will increase, while satisfying the needs of different social groups. Figure 3 shows the range of clothing for children that meets the specified requirements: T-shirts for boys and girls, T-shirts for boys and sundresses for girls, shorts for boys and summer semi-overalls for girls. Saturation, brightness, multicolor will emphasize the traditions, taste, mood of consumers.

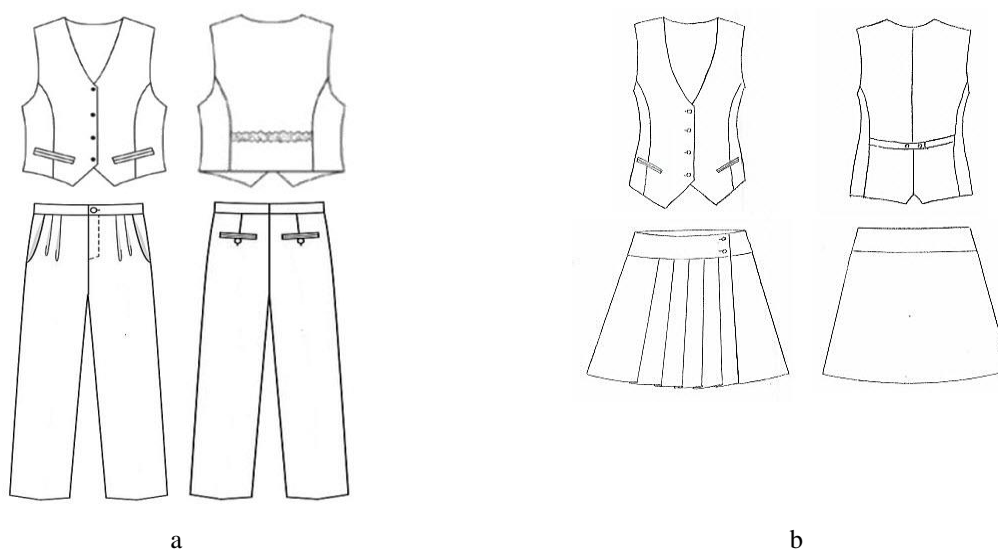


Figure 3. Sketches of costumes: a - for boys; b - for girls

And the use of patchwork in the production of children's clothing through the use of waste materials significantly reduces the cost of its production and expands the color gamut, which ensures not only demand, but also a flexible price niche that guarantees its sale to consumers with different social status. Patchwork style clothes look beautiful, original and individual.

The body shape of boys and girls in infants and children of primary preschool age does not differ, therefore, for the development of small-scale production, it is advisable to produce clothes of a universal style (unisex) for this category of children, or to vary the colors and patterns of each model for girls and boys, which does not require large labor costs. The silhouette can be free, wide, shapeless, and the shape can be rectangular, square or oval; sleeves are set-in, raglan, cuffs are fastened with buttons, Velcro, zippers. Distinctive features indicating the gender of their owner may be completely absent.

Among the most promising types of children's clothing for production and sale in the Southern Federal District and the North Caucasus Federal District are vests and trousers (skirts) for preschoolers.

In this type of clothing, you can express the bright southern flavor in the best possible way, distinguish little fashionistas against the background of their peers, gradually instilling good taste in clothes, the ability to look after their appearance, since very soon they will have to go to first grade, where they will have to spend many hours at school, form requiring some care in handling. After the resumption of the institute of school uniforms in Russia, it became clear that schools would become one of the largest customers of sewing enterprises, and so far there are not very many of them in the Southern Federal District and especially in the North Caucasian Federal District, it is worth taking the moment to develop your small production, starting with sewing clothes for preschoolers, and after successful consolidation in the market and the gradual accumulation of competencies with the simultaneous development of production - move on to the production of school uniforms, after all, parents will certainly give preference in her choice to an already well-known company, from which, perhaps, they once purchased a suit for their child. Light industry is one of the industries for which the problem of adaptation in the face of fierce competition is especially relevant. The main direction of

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increasing the investment attractiveness of enterprises is their innovative development. The growth of investments in innovative development will allow introducing new advanced technologies into production, updating manufactured products, developing new sales markets and ensuring a constant increase in profitability and market value of the enterprise. But at the same time there should be implementation possibilities. The intensification of investment activity, in turn, contributes to the growth of the economy, new enterprises are created with the help of investments and, accordingly, increasing the efficiency of innovation activity is the basis for building a competitive strategy for the development of light industry in Russia, ensuring effective compliance of production volumes, quality and product range with the aggregate demand of consumers, increasing the national significance and image of the industry. This requires continuous scientific and technological development aimed at improving the technology of processing materials and semi-finished products to standardize the properties and reduce the resource intensity of light industry products, the development of innovative systems for the design and engineering of light industry products, the creation of innovative designs with improved consumer and economic properties, and the optimization of technological processes. through the automation of production,

The innovative approach of enterprises is based primarily on internal resources, but for effective and long-term development it requires integration with financial, economic, research Russian and international structures.

Possibilities of using innovative equipment for the production of popular and competitive clothing for children

In modern conditions of fierce competition between domestic and foreign brands with a predominance of the latter, the wide spread of various forms of unfair competition against the backdrop of a growing backlog of technologies used in most Russian industries from the most advanced progressive and successful can be considered only such a production that actively and dynamically responds to emerging challenges. The principle of “producing only what is needed, when needed, and as much as needed” requires enterprises to adapt to the conditions for the production of products in small batches with frequent changes in the assortment, that is, to the conditions of a large assortment of small-scale production. The efficiency of the enterprise, and in many respects the ability to survive in competition, depend on the ability in a short time and at minimal cost to adjust to the production of products in accordance with fluctuations in demand. Great opportunities for this are opened by the development and implementation of flexible production systems.

Technological and organizational flexibility of production systems determines the variable potential of enterprises, their ability to promptly and adequately respond to changes in market conditions and acts as a mechanism for optimizing the structure of the technological system in order to reduce costs. Thus, the development of flexible technological processes for the production of children's clothing will ensure high efficiency in its multi-assortment production, which will lead to a sharp increase in demand for these products from the enterprises of the Southern Federal District and the North Caucasus Federal District.

The organization of a wide range of production will make it possible to turn some subsidized regions of the Southern Federal District and the North Caucasus Federal District into self-sustaining ones, increasing the level of income of the population, will become a prerequisite for creating new jobs, ensure the development of small businesses and support legal private entrepreneurial activity, and also create a basis for getting out of the shadow of a significant part of the real sector turnover economy in order to form the budget of the region, thus, the implementation of a set of measures to modernize Russian enterprises has both economic and political and social effects.

The main stage in the development of small and medium-sized enterprises should be to increase their technical level of production, ensure the introduction of competitive innovative products, high technologies, the replacement of certain types of imported products with domestic products, and subsequently their entry into the Russian and world markets. This requires measures to modernize and reconstruct existing production facilities and create new ones, strengthen internal control and introduce modern quality management systems, in the future – certification of products and production facilities themselves, development of a dealer and distribution network, an active marketing policy, expansion of innovative activities.

The effectiveness of the use of flexible technological processes for the production of a frequently changing range of products in small volumes (including single products) is possible if universal multifunctional equipment and a higher level of worker skills are used.

Further, modern effective innovative means will be considered to ensure the high-performance production of competitive clothing for children.

At the stage of product design and production preparation, an important role is played by the use of a computer-aided design system (CAD), which significantly speeds up the process of creating fashionable and comfortable clothing models and calculating technological parameters of production based on the automation of complex technical and routine processes. Figure 4 shows an example of working in CAD Gemini Pattern Editor.

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CAD, as a rule, includes several modules: technical drawing 5, design, gradation of patterns, layout of patterns, automatic cutting. This system allows in a short time to create, develop and implement new product models, increase labor

productivity, and provide more precise control at all stages of production.

Together with CAD, automated spreading and cutting systems are used.

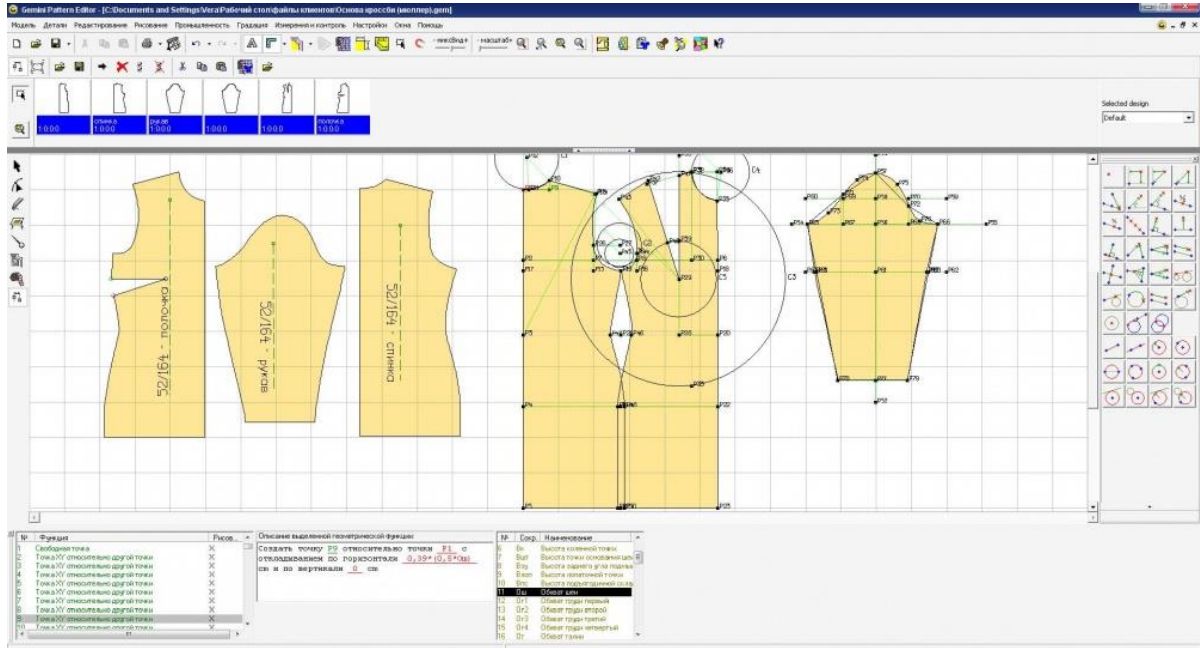


Figure 4. Pattern building window in CAD Gemini Pattern Editor

The GERBER Synchron 51 automatic spreader, shown in Figure 5, is designed for high-speed stretch-free fabric spreading with simultaneous edge alignment.

- Model characteristics:
- lullaby feeding system;
 - computer control;
 - touch control device.



Figure 5. GERBER Synchron 51 spreader

The GERBER GTxL automated cutting machine, shown in Figure 6, is designed for high-speed precision cutting.

Model characteristics:

- integrated vacuum system;

- the presence of a monitor displaying the layout during cutting, as well as the cutting sequence;
- displaying the parameters of the cutting system and their control;
- conveyor cutting surface.

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Figure 6. Cutting machine GERBER GTxL

For small businesses, the use of combined cutting and spreading systems, such as inexpensive

Rexel UL-3 semi-automatic equipment, may be a more profitable solution (Figure 7).



Figure 7. Rexel UL-3 cutting and spreading machine

Cutting and spreading complexes are automatic and semi-automatic complexes of a new generation that facilitate and simplify the process of cutting. Their use in the sewing industry leads to an increase in productivity by reducing the loss of time for combining patterns during sewing, and they can be serviced by one operator who sets the specified parameters and loads a roll of fabric, monitors the state of the process.

The table shows the characteristics of the latest equipment, the use of which for sewing and wet-heat treatment of vests for girls of preschool age will allow in the shortest possible time to create high-quality unique products that are in demand on the market of the Southern Federal District and the North Caucasus Federal District. Particular attention is paid to wet-heat treatment, as one of the determining factors for giving products an anatomically correct shape during manufacture.





The introduction of high-tech equipment complexes at domestic enterprises based on the recommendations proposed above will make it possible to create a product that is competitive not only in the domestic market of the regions of the Southern Federal District and the North Caucasus Federal District, but also in other local markets, including foreign ones. And if the requirements of Roskachestvo for the localization of production are met, then when the product meets the increased requirements of the Russian quality system, it can be awarded the Russian Quality Mark. And labeling products with this sign opens up new opportunities for both consumers and manufacturers. The consumer receives a clear benchmark that indicates the high quality of a particular product, as a result of which its sales are growing, which will be beneficial to the manufacturer, increasing its potential for import substitution, which also allows him to count on an

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influx of investments. The use of natural materials as an important factor in the growth of the competitiveness of children's clothing manufacturers.

Table 3. Equipment for tailoring and wet-heat treatment of vests for girls

equipment identification	Characteristic
1	2
<p>Duplication press Kannegiesser</p> 	<ul style="list-style-type: none"> - the presence of a control panel with a device for self-diagnosis of duplication parameters and immediate reporting of deviations in the operation of the machine; - transport system with special anti-adhesive conveyor belt
<p>Semi-automatic for grinding tucks on the chest PFAFF 3519-3-12</p> 	<ul style="list-style-type: none"> - allows you to perform a high-quality seam stitching tuck due to the sealing of the stitches at the end of the seam; - the length and width of the tuck, depending on the height and size, is easily programmed; - due to the fact that the part of the front is positioned with the front side up, when grinding the darts on products made of fabric in a strip and a cage, the accuracy of combining the fabric pattern is ensured
<p>Semi-automatic valve turning DÜRKOPP 739-23-1</p> 	<ul style="list-style-type: none"> - allows you to create valve parts of various shapes, keep up with fashion changes; - easy to program using a personal computer; - the program is recorded on the TAGLOG chip and placed in the template; the machine reads the information and performs the work automatically; - high quality is created by precise edge trimming and perfect fit
<p>Semiautomatic machine for making side pockets DÜRKOPP 745-34</p> 	<ul style="list-style-type: none"> - double photoelectric element, which this machine is equipped with, recognizes the shape of the valve, the displacement of the seam, the position of the corner knives; - allows you to process different types of pockets: in a frame with a valve, in a frame without a valve; - the machine adjusts ergonomically to the worker, leaving the working area free to view, thereby increasing quality and productivity

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<p>Universal sewing machine for main seams DÜRKOPP 275-140342</p> 	<ul style="list-style-type: none"> - equipping this machine with a puller allows you to perform a high-quality seam in products from fabrics of various types and compositions
<p>Press for ironing leaves Macpi</p> 	<ul style="list-style-type: none"> - the ironing press is equipped with leaf patterns of different sizes; - the sides of the leaflet are ironed, a line is extruded along which the detail of the leaflet is tuned to a part of the front; - high productivity and shape retention accuracy are the main advantages; - easily adjustable depending on the type of fabric being processed by changing the pressure and amount of steam, pressing time
<p>Carousel press for molding front parts Macpi</p> 	<ul style="list-style-type: none"> - allows you to easily create a form given by the design; - equipped with a computer, which allows you to change the pressing parameters depending on the composition and type of fabric
<p>Ironing press for bottom ironing Macpi</p> 	<ul style="list-style-type: none"> - eliminates a number of manual manipulations: drawing a chalky bottom line, sweeping the bottom hem, etc.; - high performance; - equipped with a computer that allows you to perform a high-quality technological operation in products from fabrics of various compositions
<p>Armhole lining sewing machine DURKOPP 697-15155</p>	<ul style="list-style-type: none"> - the column structure provides convenience of work on it; - equipped with a thread trimmer and stitch release device, which is activated when sewing through the shoulder pad;

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	<ul style="list-style-type: none"> - it is possible to adjust the fit of both the upper and lower layers of the fabric
<p>Finishing stitch machine AMF REECE 59/83</p> 	<ul style="list-style-type: none"> - high-quality finishing line, imitating a decorative hand stitch, relevant in modern fashion; - easy adjustment of stitch length; - different types of stitches: dotted, uniform, long/short
<p>Equipped workplace for sewing on buttons PFAFF 3307-3/01B PFAFF 3307-9/01C</p> 	<ul style="list-style-type: none"> - machines with electronic control for sewing on buttons with a displaced top and a deflecting needle bar; - simple programming of a seam on the control panel in the Teach-in mode; - sewing on buttons on a leg, without a leg and with a blind stitch with a tacking of the collar; - free choice of leg wrapping operation
<p>Press for finishing wet-heat treatment Macpi</p> 	<ul style="list-style-type: none"> - simultaneous pressing of the right and left shelves; - equipped with a video computer; - software management; - high-performance; - Equipped with precise pressure and steaming device

Table 4 shows the characteristics of high-tech equipment for the production of trousers for preschool boys.

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Table 4. Equipment for sewing trousers for boys

equipment identification	Characteristic
1	2
<p>Sewing machine for sewing tucks and folds on the belt DURKOPP 743-221</p> 	<ul style="list-style-type: none"> - stitching darts on the back of the trousers; - stitching darts-folds on the front of the halves of the trousers; - precise quick adjustment of various depths of tucks and pleats; - allows you to easily adapt the installation to different requirements
<p>Semi-automatic for turning the toe of the trouser belt DURKOPP 739-23-1</p> 	<ul style="list-style-type: none"> - allows you to create details of the toe of the belt of various shapes, is easily programmed using a personal computer, the program is recorded on the TAGLOG chip and placed in the template, the machine reads the information and performs the work automatically; - high productivity, high quality is created by precise edge trimming and perfect fit
<p>Semi-automatic overcasting section DURKOPP 1265-5</p> 	<ul style="list-style-type: none"> - a semiautomatic device for overcasting of back and forward parts of trousers; - allows you to make a partial fit on the lining; - programming for overcasting complex fabrics
<p>Special machine for finishing stitching on the belt of trousers DURKOPP 550-5-5-2</p> 	<ul style="list-style-type: none"> - especially for the operation of laying the finishing line along the belt of trousers; - accurately and evenly processes the belt; - large passage under the sewing foot; - ergonomic worktop allows free hand movement when moving the workpiece
<p>Special machine for stitching side and step seams DURKOPP 550-8-2/0</p>	<ul style="list-style-type: none"> - the top and bottom conveyor works absolutely synchronously, even at high speed;

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	<ul style="list-style-type: none"> - always smooth seams limiting ruler on the edge facilitates the positioning and advancement of the part, ensures first-class quality
<p>Trouser fly and hem processing machine DURKOPP 550-2-1</p> 	<ul style="list-style-type: none"> - smooth seams; - device for notches; - specially for sewing on a hemmed codpiece and sewing on a bevel with a zipper, all operations are carried out, without additional retooling
<p>Corsage to belt sewing machine DURKOPP 550-5-6</p> 	<ul style="list-style-type: none"> - double chain stitch; - Equipped with corsage roll holder; - plate for inserting belts; - when processing the right and left belts there is no need for retooling
<p>Machine for attaching a zipper to a codpiece DURKOPP 50-2-2</p> 	<ul style="list-style-type: none"> - ideally adjusts the endless zipper to the codpiece of the trousers; - the equipment of the device guarantees the adjustment of the zipper without displacement; - limiting ruler controls the width of the seam
<p>Semi-automatic sewing trouser tape on the bottom of trousers DURKOPP 1500/70-2</p>	<ul style="list-style-type: none"> - two-needle, chain semiautomatic device; - trouser tape is automatically guided, cut off at the end of the seam and then automatically retracted back to the beginning of the seam; - programming the supply of trouser tape


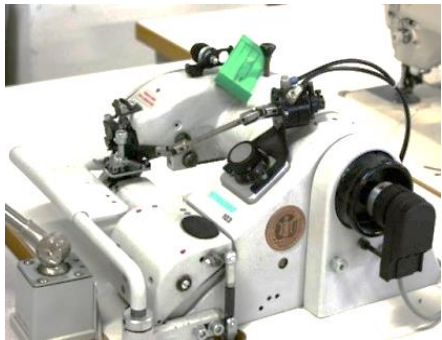
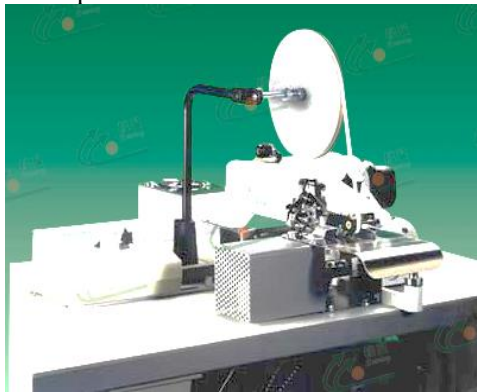

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<p>Semi-automatic for fastening belt loops and corners of trouser pockets DURKOPP 510-211</p> 	<ul style="list-style-type: none"> - all bartacking works with a sewing field size starting from 40 × 20 mm, used for 0.1 mm steps in length and width; - 50 programmed standard bartacks; - when changing the presser foot, the possibility of a curly bartack on the corners of the pockets
<p>Semiautomatic button sewing DURKOPP 530-211</p> 	<ul style="list-style-type: none"> - double lockstitch; provides great opportunities for their application; - processing of buttons with 2, 3, 4 and 6 holes and diameters from 8 to 30 mm is possible; - the graphic display is serviceable and works without any additional programmer
<p>Label sewing machine PFAFF 2438-6/03-980/32 AS</p> 	<ul style="list-style-type: none"> - automatic recognition of a label edge by means of a sensor; - 15 programs with 15 corresponding seam sections; - the possibility of automatic tuning of touch control on various materials; - Stitch length adjustment using the BDF-S2 control panel
<p>TYPICAL GC8000MD3</p>	<ul style="list-style-type: none"> - universal automated machine; - has the function of automatic thread trimming, backtacking, thread take-off and stitch adjustment

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<p>STROBEL 103-150</p> 	<ul style="list-style-type: none"> - a machine for hemming the bottom of trousers, a blind stitch machine; - Equally suitable for hemming light and medium weight fabrics
<p>Single thread blind stitch machine for making belt loops STROBEL 103-258 MB</p> 	<ul style="list-style-type: none"> - supply of cushioning material by a belt conveyor together with the top material; - cutting device of a given width of the belt loop; - secret stitch; - ironing in a steam device; - belt loops without stitches visible from the outside.
<p>Semi-automatic inner pocket AMF REECE LW-6000</p> 	<ul style="list-style-type: none"> - production of pockets in a frame on a lining; - software control and graphic display; - electronic adjustment of speed, position of corner knives, central knife, parameters of the performed pocket

The second key direction in increasing the competitiveness of summer clothing for children is the

use of materials in its production that provide maximum comfort when wearing it and safety. For an

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active child's body, these characteristics of summer clothing are the most important, especially in hot weather - after all, fabrics of light clothing that are close to the skin must have high air and vapor permeability and good hygroscopicity in order not to prevent the removal of carbon dioxide from under the clothes. gas, sweat and a number of other metabolic products emitted by the skin, and there should also be no release of unacceptable harmful substances from tissues.

For children of preschool age, it is permissible to use capro-viscose linen and linen made of cotton-lavsan yarn with a content of nylon and lavsan not more than 40%, as well as cotton linen in combination with a nylon textured elastic thread (not more than 23%) in clothes.

However, the most suitable materials for the production of children's clothing with acceptable hygienic characteristics are natural products. Cotton and linen fabrics, as a rule, have good hygienic properties, which is also important for maintaining the mechanisms of thermoregulation in children, since at this age they are still as formed as in adults, so children are more susceptible to overheating or hypothermia, which can lead to malfunctions in the work of the body, the development of certain diseases. In this regard, the most promising direction for improving the materials used is the use of organic materials.

Organic materials, or eco-materials (biomaterials), have become increasingly popular in recent years. This is due to the fact that no chemical additives and carcinogenic pesticides are used in their cultivation, which is confirmed by the presence of laboratory test certificates.

The most common eco-friendly materials include: cotton, linen and bamboo. So, organic cotton is even softer, provides maximum comfort due to its Ph-factor close to human. Moreover, this material has antibacterial properties, its breathability is about 10% higher than usual, its fibers are stronger, which increases the wear resistance of the material. Organic linen is a little less applicable in the manufacture of children's clothing due to its rigid structure. And the most common eco-friendly material has become bamboo, which has a number of such positive qualities as: silkiness, hypoallergenicity, high hygroscopicity, maintaining thermoregulation, and it also has antibacterial qualities and is very resistant to ultraviolet radiation, which is especially important in the summer season.

Another worthy representative of organic materials is ramie nettle fabric, which has a fairly high strength, many times greater than the strength of cotton. One of the aesthetic features of this fiber is its brilliance, which is not lost after washing or under the influence of the sun, but on the contrary, it becomes even more spectacular. Nettle is not prone to decay, which means that there is no need for serious chemical treatments, thereby classifying it as an

environmentally friendly fabric. The fiber does not cause allergies and skin irritations, does not contain toxins, herbicides and pesticides are also not used during cultivation. The fiber perfectly absorbs moisture, while the body "breathes" freely. In hot weather, ramie clothing is especially relevant: the fiber allows you to maintain an optimal climate for clothing and protects the skin from various inflammations,

Hemp is one of the most ancient types of crops used by man for the production of fabric due to its many positive properties: the most durable natural fiber, does not stretch, retaining the original shape of clothing, very soft textiles, becoming even softer over time, guaranteeing comfort and convenience of clothing, very high hygroscopicity and breathability. Also, hemp fibers have antibacterial and antifungal properties that naturally prevent decay and the development of parasitic fungi, so pesticides and herbicides are not used in the cultivation of hemp culture. The properties of hemp fibers have also been proven to reduce the effects of ultraviolet rays on the skin: the fabric is able to filter most of the spectrum of ultraviolet rays.

A significant limitation in the use of organic fabrics in the production of clothing for both children and adults is their high cost. That is why manufacturers seeking to conquer various price markets should rely on the exclusivity of such products, selling them to other large Russian regional markets, as well as abroad, which should have a positive effect on increasing the brand awareness of the manufacturer. To reduce the cost of individual product lines, it is necessary to use blended fabrics containing both organic and conventional fibers. To bring the price even closer to the market average, you can also use fabrics with the addition of artificial fibers, which will also allow you to indicate "made with organic" on the clothing label.

Thus, organic materials have a significant set of useful properties that can positively affect the health of a child when wearing clothes made with their use. Indeed, against the backdrop of the annual deterioration of the environmental situation, the use of synthetics of not the best quality in all household items surrounding a person, including clothing, it is no coincidence that a fashion for environmentally friendly products appeared: clothes, food, bedding, etc., and many parents seek to protect children from its harmful effects by purchasing products of the so-called "eco brands", and someone is simply an adherent of the concept of "being in trend". Therefore, the use of natural hypoallergenic materials in the production of children's clothing is characterized by high prospects for increasing the competitiveness of Russian industries.

The use of ecological technologies for the production of children's clothing guarantees the safety of its operation. Unfortunately, in pursuit of maximum

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profit, manufacturers often try to use cheap raw materials and materials, hiding defects behind a large number of finishing effects, thereby trying to sell a bad product in a beautiful package. Modern technological methods can "change the face" of a bad material, but cannot improve its poor performance properties. In addition, in the production of some effects, very aggressive chemical materials are used, which can harm the skin of a child. The basis of the ideology of Russian manufacturers of clothing for children should be a rule defining the requirement for choosing only the best raw materials for children's clothing, delicate and environmentally friendly processing methods.

An important parameter of the environmental friendliness of clothing is the use of modern anthropometric sizes of children when developing the design of a model. The use of outdated or foreign anthropometric data in the construction of patterns leads to incorrect and uncomfortable fit of clothes on modern Russian children. Carried out in accordance with the current SanPiN 2.4.7 / 1.1.1286-03 "Hygienic requirements for clothing for children, adolescents and adults", labeling products according to the main dimensional features - chest girth and height, can guarantee the correct selection of clothing.

Operating and newly created enterprises and firms in the South of Russia, using the proposed measures, will be able to produce competitive clothing for children in the required volume to meet the demand of various groups of the population with a certain level of income and social security. Economic justification for the use of innovative technologies for the production of popular children's clothing

The dynamics of the market development invariably shows the growing interest of consumer demand in the quality of goods. With all the economic, social and political costs, humanity is getting richer, but wealth is distributed unevenly. Finance, as before, is concentrated in certain regions, however, in the same way as new modern production. Analysts predict the course for the quality of goods confidently and everywhere: the mass consumer has realized the need to pay for the advantage of quality services and products.

Economists unequivocally state that the improvement in the quality of goods is not connected causally with an increase in price. Positive changes in the quality of goods require qualitative changes in engineering, technology, organization and management of production. Production must improve, but not become more costly.

The expansion of the market for domestic goods will help meet the effective demand of the population for various price groups of products, taking into account consumer preferences. However, the production of children's clothing is associated with a number of economic features that have a great influence on its organization. In conditions when the

production of children's clothing is scattered among many non-specialized enterprises and occupies a small share in production programs, the economic interest of clothing factories in increasing its output is not always achieved, since the production of this assortment often does not ensure the fulfillment of the technical and economic indicators of the plan. The low level of specialization in production hinders the growth in the production of children's clothing and gives rise to duplication of uniform models and styles, limits the possibilities of rational, economical use of fabrics, which helps to reduce costs and achieve the necessary profitability in the production of products for children. The conditions for reducing the cost of raw materials for the production of children's clothing, and at the same time for increasing labor productivity, are to a large extent achieved by specializing production and making fuller use of internal reserves.

To this end, the above recommendations for upgrading the equipment of enterprises producing clothes for children, in order to improve the technological process to increase its flexibility, can also be applied at enterprises engaged in tailoring men's clothing. The implementation of this proposal will significantly reduce the cost of creating a new production, eliminating the need for the construction (rent) of buildings, providing all the necessary communications, hiring the necessary staff of performers, equipping new workshops, creating design and technology departments, state registration of new production, etc. for production of children's clothing in affordable price niches.

Implementation of the planned transformations can be implemented using the mechanisms of state support, the main source of which is currently considered to be subsidizing leasing.

Leasing is a type of financial services, a form of lending for the acquisition of fixed assets by enterprises or high-value goods by individuals. The lessor undertakes to acquire ownership of the property determined by the lessee from the seller indicated by him and provide the lessee with this property for a fee for temporary possession and use. Most often, this is done for business purposes, but from January 1, 2022, this is not mandatory in Russia. The leasing agreement may provide that the choice of the seller and the acquired property is made by the lessor. The lessee may initially be the owner of the property.

Leasing allows you to apply accelerated depreciation, it is possible to redistribute the timing of VAT payment. In fact, leasing is a type of long-term lease of property with a subsequent right to purchase, which compares favorably with a traditional bank loan. The bank begins the process of obtaining a loan by reviewing the application, and most banks will definitely require the property already owned by the enterprise as collateral. The amount of the loan will depend on the value of the property. The bank evaluates the property of the enterprise not at market

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value, but at the one for which it will be possible to sell the pledge in the shortest possible time. Accordingly, the value of collateral will be greatly underestimated.

However, during leasing, the lessee receives the equipment it needs and begins to operate it, but at the same time it remains the property of the leasing company. At the same time, the lessee undertakes the obligation to gradually buy out new property from the company, i.e. like renting equipment. Therefore, in the case of leasing, collateral or an excellent credit reputation is not required - the equipment acquired under leasing remains the property of the lessor until the lessee pays for it in full. In addition, unlike banks that issue loans (especially to small businesses) for a period of about five years, leasing companies can significantly increase the repayment period. Depending on the purchase, companies allow themselves to expand the scope up to 10 years.

Leasing also provides the lessee with the opportunity to use the property in carrying out entrepreneurial activities and subsequently obtain ownership of it. Leasing agreements may provide for the accounting of property both on the balance sheet of the lessor and the lessee.

The buyer of equipment on credit has the opportunity to transfer the value of the property to the cost price through depreciation, however, interest on the loan accrued after receiving the property is not included in the cost of the property, therefore, cannot be transferred to the cost price.

Lessees, in the case of accounting for property on the balance sheet of the lessor, have the opportunity to include leasing payments in the cost price, which ensures the transfer of the cost of property to the cost price in a much shorter time compared to the purchase of equipment at the expense of borrowed funds.

This option, unlike the purchase, also allows you to include in the cost of interest on borrowed funds,

which are included in the amount of the lease payment. The leasing option, taking into account the property on the balance sheet of the lessee, also allows you to transfer the cost of equipment to the cost price through depreciation in a shorter period of time due to the use of a multiplying coefficient to the depreciation rate, as well as include the cost of interest on attracted funds in the cost price.

Funds provided by the Industrial Development Fund at a preferential rate of 5% per annum allow financing the necessary development and technological work, without which it is impossible to produce innovative products. In addition, the mechanism of the fund hides a potential that has not yet been used, because the allocated funds can be considered not only as a tool for purchasing equipment. These funds, in fact, can become a down payment on leasing and other payments for the purchase of such equipment. Proper use of this mechanism will allow enterprises to increase the funds raised by 5-8 times.

In the cost of production of children's clothing, the largest share is the cost of raw materials and basic materials, and then wages and depreciation. The results of calculating the costs in the retail price of children's clothing are shown in Table 5.

In a dynamically changing market environment, the results of an enterprise's activities largely depend on the effective results of the production, sales, financial and marketing policies of the enterprise itself, which creates the basis for bankruptcy protection and a stable position in the domestic market.

The study of the costs of improvement in terms of consumer quality factors for each type of designed product will reduce the risks of losses associated with consumer dissatisfaction, these costs should be taken into account by manufacturers when forming a new range.

Table 5. Share of expenses in the retail price of children's clothing, %

Indicators	Minimum meaning	Maximum meaning	Average
Raw materials and basic materials minus returnable waste, by-products and by-products	14.2	36.6	23.1
The cost of the main type of raw material	8.1	32.7	19.2
The cost of other types of raw materials and basic materials	1.2	9.6	4.1
Return waste, by-products and related products (deductible)	0.01	1.4	0.3
Production costs, including selling expenses	15.7	30.9	24.3
Auxiliary materials for technological purposes	0.1	3.6	1.0
Fuel and energy, including water and steam for technological purposes	0.4	2.1	1.4
Costs for preparation and development of production	0.01	0.3	0.1

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Costs for the maintenance and operation of equipment	0.1	2.8	0.8
Salary with deductions for social needs	6.3	17.9	9.8
General business (general factory) expenses	1.5	10.4	5.2
General production (shop) expenses	0.7	7.6	3.9
Other operating expenses	0.1	3.2	0.7
Selling expenses	0.3	4.7	1.5
Total unit cost	9.9	56.2	44.3
Actual profit, loss	3.8	9.9	6.2
VAT	4.4	9.1	6.3
Other types of taxes	0.01	0.5	0.1
Payment for the delivery of products (goods) to customers, carried out by the enterprise	0.01	0.2	0.1

Features of the development of design and technical documentation for a women's suit, taking into account the age characteristics of the customer in small enterprises within the framework of the TOP.

The main direction in the development of the clothing industry implies continuous improvement in the quality and expansion of the range of garments, increasing the satisfaction of citizens with the quality of services and services, therefore, when creating clothes, the latest achievements of science and technology should be used, optimal creative compositional solutions should be chosen.

Every year in our country, the requirements for the quality and assortment of clothing, including clothing manufactured according to individual orders of the population, are increasing. The production of high-quality, fashionable clothes that correspond to the best international prototypes is unattainable without the use of advanced technology and technology at all stages of production, including design and modeling, which determine the future fate of a new clothing model.

Today's costume reflects the development of society, its main values, achievements and discoveries. The transformation of the costume is closely connected with the development of various forms of arts, techniques, technologies and any sphere of human work. Clothing for everyday wear is characterized by versatility and convenience. There are a huge number of variations in the style of clothing for everyday wear. Do not be afraid to show individuality. Casual style is perfect for peppy, young people who value comfort. The suit is rationally combined with business-style clothing, which has become softer and more feminine over time.

The designed suit is relevant, as it was created in a casual business style, which is characterized by some freedom, especially when compared with strict and boring office looks.

The volume and structure of the youth clothing wardrobe change under the influence of a number of factors - gender and age differences, social status, average per capita income, place of residence, nature of work, leisure activities, etc. Consumers of this group steadily show a tendency not to expand, but to update the wardrobe. The main reason for updating the wardrobe is a change in fashion.

This suit was designed for women of the younger age group (up to 29 years old) who lead an active lifestyle, so it was important to take into account the trends and fashion trends, choose the silhouettes that are preferred for the customer and relevant from the point of view of modern fashion, cut, color scheme.

For the customer of this age group, in accordance with his desire, appearance, age, features of the figure, the purpose of the product, a suit made of bright yellow cotton denim was selected. This material is great for an active lifestyle. The selected color of the material is fully consistent with the appearance and color type of the customer and emphasizes all the existing advantages.

To achieve this goal in the course of the final qualification work, it is necessary to solve the following tasks:

- analyze fashion trends for the current and future periods;
- develop design and technical documentation.

The need to perform design work lies in the use of CAD, since one of the most promising areas for increasing efficiency in the development of clothing is the use of CAD "Grace" (version 401)

This system allows you to develop clothing designs, create and perform gradation of patterns, perform layouts, calculate material consumption rates, determine the labor intensity of manufacturing products, and facilitates the implementation of many other stages of clothing design.

Aesthetic requirements

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Aesthetic requirements for industrial products are the rationality of the form of the product and its relationship with the functional content of the product.

The aesthetic level of a modern costume is determined by the combination of factors in it: the novelty of the model and design, compliance with modern style and fashion, the perfection of the composition of the model, presentation. The aesthetic perception of clothing as a whole also depends on the accuracy of technological processing and finishing of all structural elements: the symmetry of the position of paired parts, the accuracy of finishing stitches, the quality of the lining, etc.

Color, constructive - decorative solution and style of models should be in harmony with each other, creating the integrity of the image.

Ergonomic requirements

Ergonomic requirements for clothing are associated with hygienic, anthropometric and psychophysiological characteristics of a person.

Hygienic requirements for the selected type of product characterize its compliance with sanitary and hygienic standards and recommendations that provide comfortable conditions for the microclimate of the underwear space.

Anthropometric requirements are the conformity of the design of clothing to the size (proportionality) and shape of the human body (balance).

Psychophysiological requirements are characterized by indicators of the conformity of clothing to the physiological properties and psychological characteristics of a person. Based on this, psychophysiological requirements are specified by the convenience of putting on and taking off clothes, the convenience of using individual elements of clothing and the mass of clothing.

Operational requirements (reliability)

Reliability determines the reliability, durability, maintainability of the product. Reliability includes the full period of wear until the moment when the product comes into a state of moral and physical unsuitability.

Technological requirements

- type of production: production of products according to the orders of the population;

Technical Proposal.

Analysis of the fashion direction for the current and future periods

The collection, systematization and analysis of information presented in specialized websites and electronic resources ELLE.RU, BAZAAR.RU and VOGUE.RU led to the conclusion that in 2023/2024 designers offer to experiment with silhouettes, volumes and decorative elements. So, they suggest actively using a trapezoid silhouette, also a fitted silhouette with accents on the hips and a fitted silhouette with accents on the shoulders. Couturiers also offer to include oval silhouette clothes in their images.

Sloping shoulders, large sleeves and a thin waist remain fashionable. Trendy are accents on the shoulders and a variety of cutouts.

The most edgy jackets this season are those with "bulging" shoulders, angular and pointed.

The waist line is in its place at Louis Vuitton, but at Her-mes it falls to the hips, and at Dior it rises under the chest.

If we talk about the actual elements and details, then we can distinguish the following: at the peak of fashion there was an open back, blankets, a cage, a low waist, all kinds of cutouts, fringe and "strings", top bandeau and bright colors also do not give up their positions. Suddenly, miniskirts have returned to fashion, but designers still advise against wearing tight and low-volume skirts, but recommend paying attention to free volume and A-silhouette.

In the current season, the following shades are the actual palette: lemon, lavender, the color of mint candy and clear sky. The white gamma this season is represented by a shade of airy meringue. Ideal examples are presented in the collections of Christopher Esber, Y/Project and Gabriela Hearst.

The list of colors unexpected for summer is headed by chocolate - rich dark, like Hermès and Ami. It looks great in the form of tight tops and formal suits that can be worn with a bra or even on a naked body. Another not the most familiar shade for the warm season is bright blue sapphire. Its best variations can be seen in the collections of Isabel Marant, Nina Ricci and Chanel. And finally, it is important to note the shade of pink peony - it was used by a record number of designers this season.

Based on the analysis of fashion trends, a trend board was compiled. A trend board is a small part of a portfolio, a sketchbook. It contains a selection of styles, silhouettes, ideas, trendy colors, trends, materials, color palettes, and more.

The concept of this trend board is to create a youth collection that is different from the usual gray and everyday clothes; a collection that sets you in a positive mood and evokes a lot of vivid emotions; adding color to workdays through street fashion, conveying the color and identity of the lineup.

Development of a sketch of the designed model

In order to identify the diversity and novelty of artistic design solutions of the designed range of products and further selection of the designed model, a search and analysis of analogue models was carried out.

Models - analogues are models of clothing of the same assortment group, selected within the same age group, for the same purpose, having a similar constructive basis (the same structural elements, segmentation, silhouette, cut), but differing in decorative elements, material, etc. As sources of information in the selection of models - analogues,

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samples of finished products, fashion magazines, catalogs of models were used. Models are selected taking into account the direction of fashion.

In the final qualifying work, three models are presented - analogues, which were developed on the same constructive basis: semi-adjacent silhouette, set-in sleeves, but differ from each other in length, neck shape, bottom length. Sketches of models - analogs are presented in the form of sketches of a general view on a human figure with a clear drawing of all constructive and decorative elements.

The purpose of the analysis of models - analogues - is to obtain initial data for creating the most rational design based on the selection of all the positive qualities of previously developed models.

Based on the results of the analysis of the promising fashion direction and analogue models, a sketch of the designed model was developed.

Table 5 and Figure 8 present an analysis of models - analogues of a women's suit.

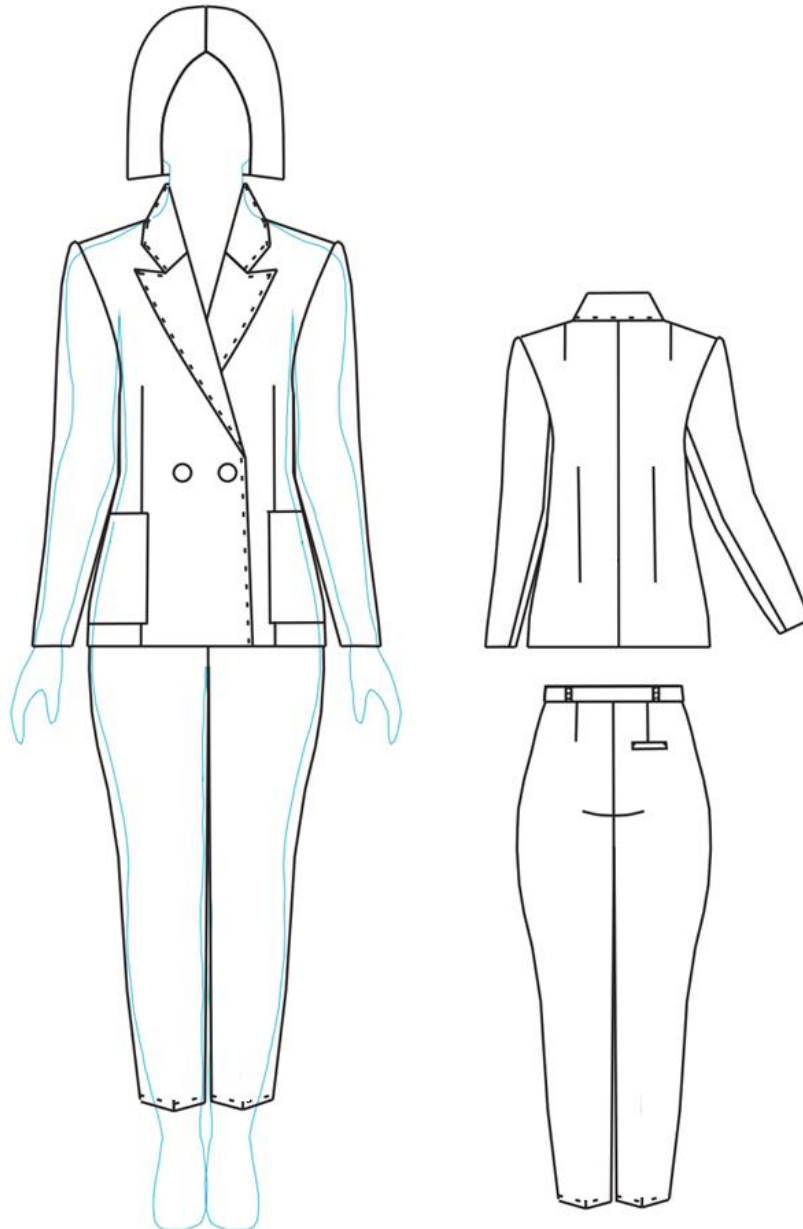


Figure 8. Sketch of the designed model of a women's suit

Description of the appearance of the model
The description of the costume model is presented in the form of the "Description" window in

the "Grace" CAD in accordance with Figures 9 and 10.

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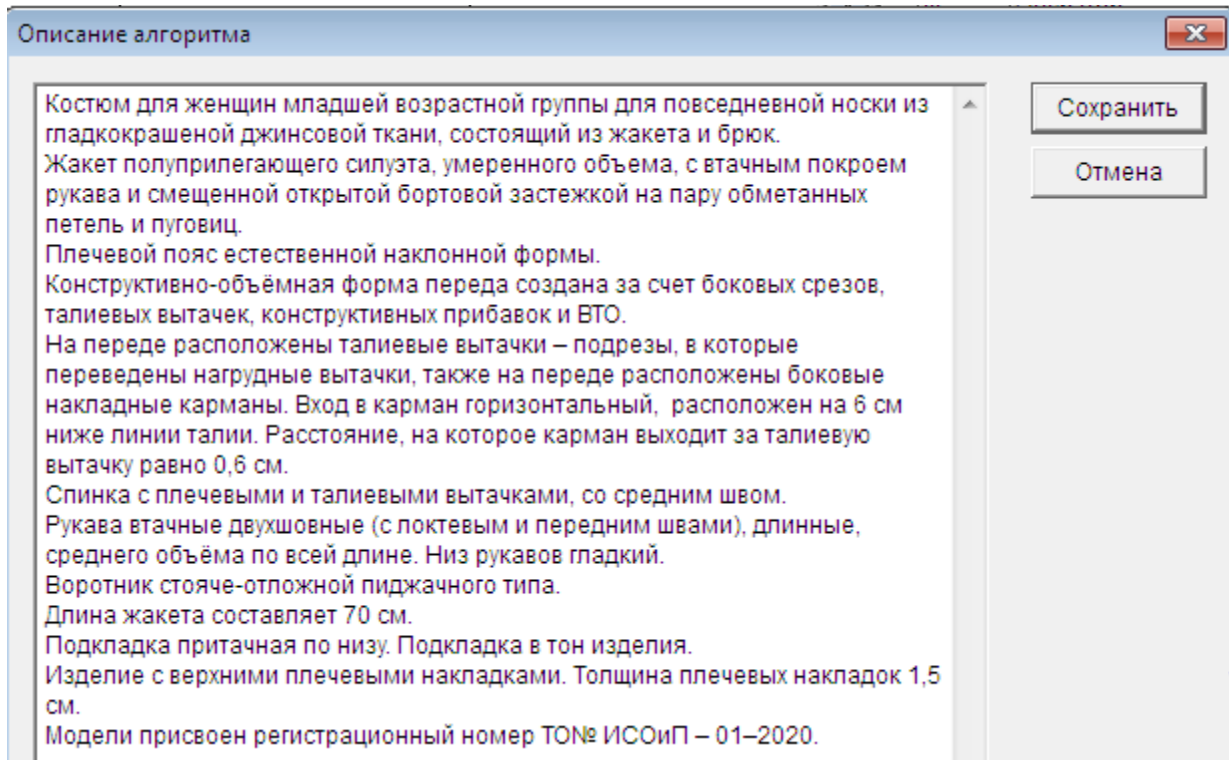


Figure 9. Screenshot of the "Description" window of the designed jacket model in CAD "Grace" (version 401)

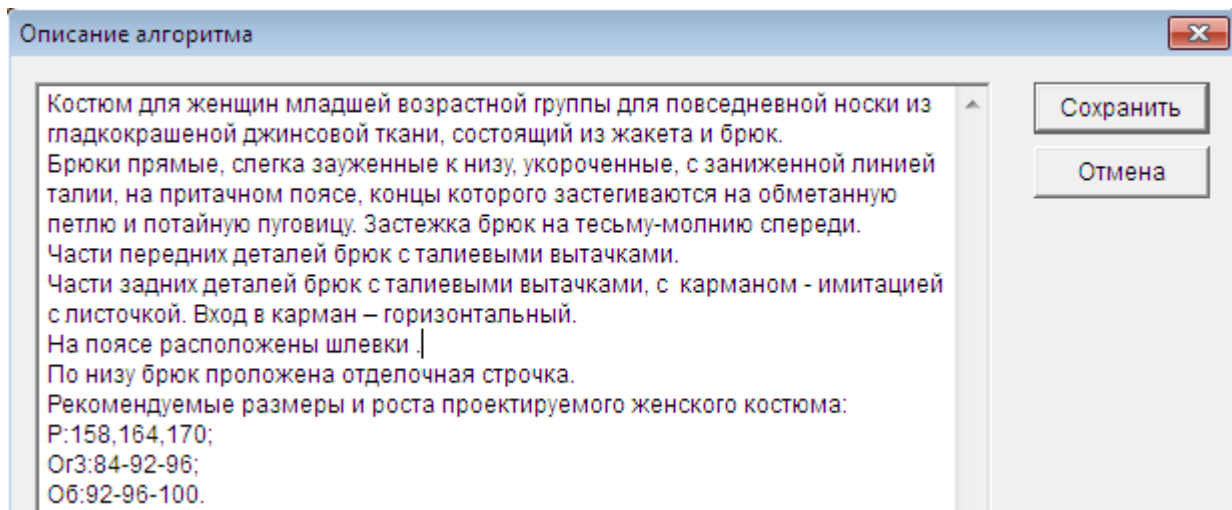


Figure 10. Description of the designed model of trousers in CAD "Grace" (version 401)

Study and analysis of the designed model

When studying the model, its features were identified and all the data necessary for developing the design of the designed model were determined, such as the length of the product and sleeve, the position of the chest line, waist and hips, the position of the main structural lines and seams. The analysis also established the silhouette, cut, volume of the product, lapel width, number and location of loops, position and configuration of the collar, position of pockets).

To work with the sketch, first of all, a transitional scale was found. It is determined by the ratio of overall dimensions in full size to the corresponding parameters in the figure. As such parameters, unchangeable dimensional features are selected, for example, "Height", "Width of the shoulder slope", "Distance between teat points", etc. (Figures 11 and 12). For the vertical scale, the value of the dimensional attribute "Height" was used, for the horizontal - "Width of the shoulder slope".

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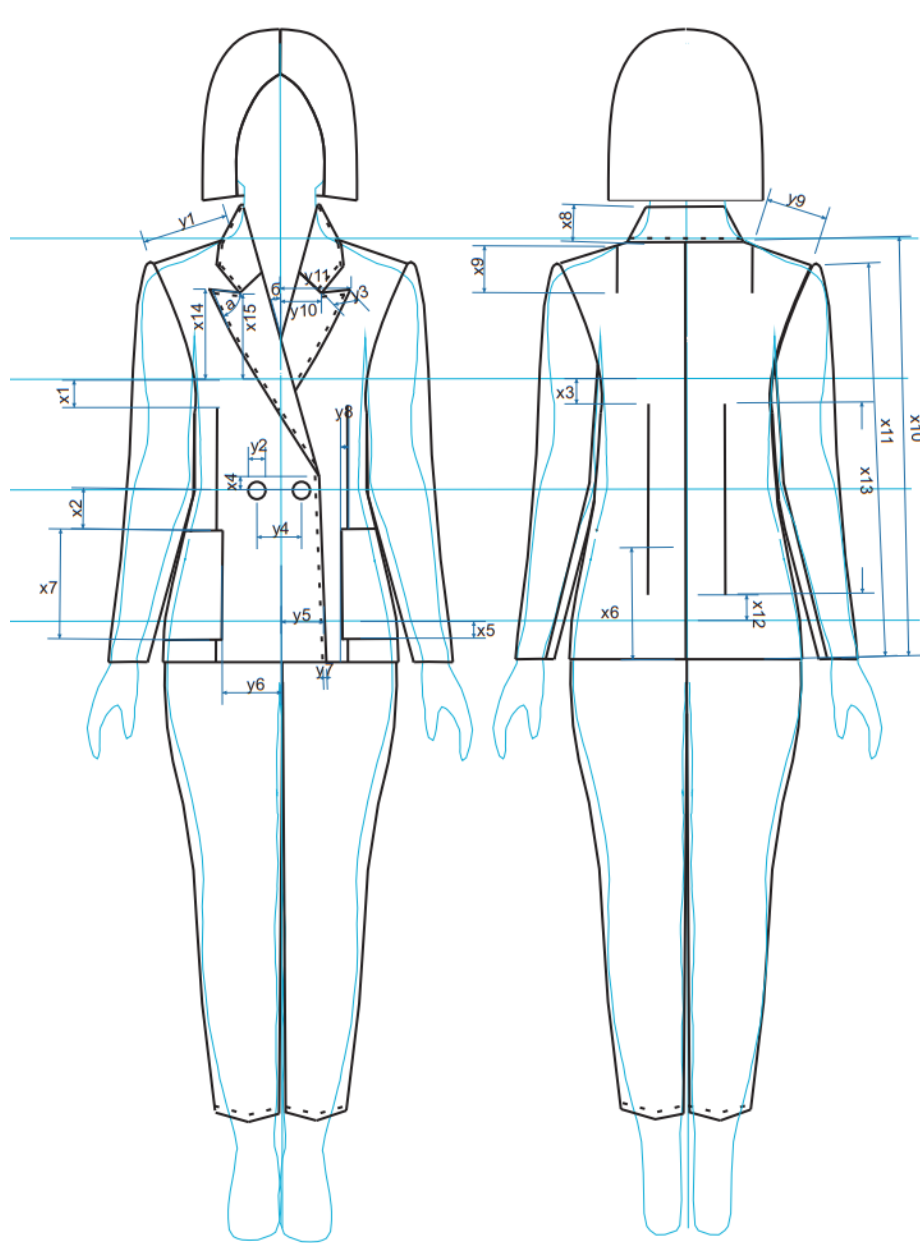


Figure 11. Analysis and study of the designed model of the jacket

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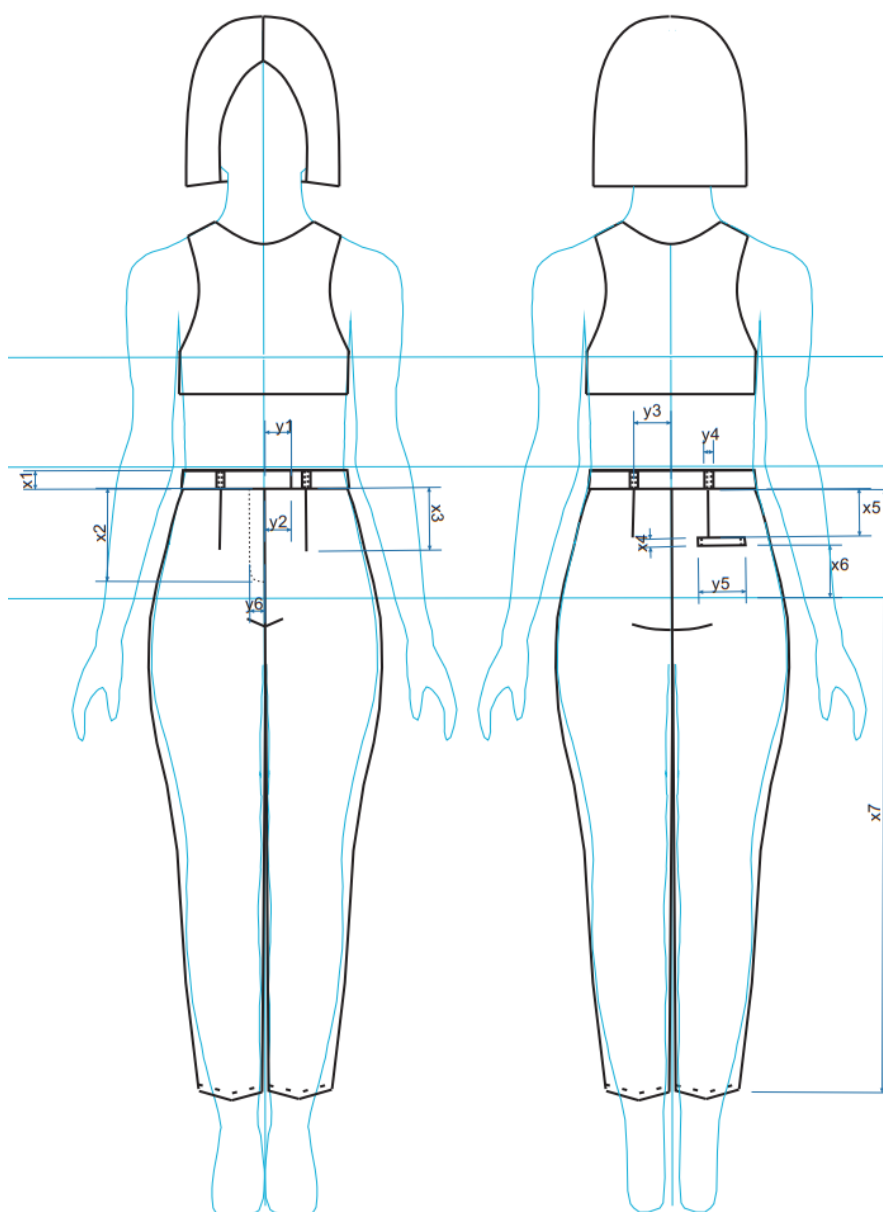


Figure 12 - Analysis and study of the designed model of trousers

The data obtained as a result of studying and analyzing the model on the overall dimensions and location of the model elements of the design details of

the jacket and trousers are presented in accordance with Table 6.

Table 6. Overall dimensions of the details of the designed model of the suit (jacket and trousers)

Name of the constructive section	Symbol in the figure	Size in the picture, PP, cm	Full size, pH, cm
Pants			
Vertically			
belt width	X1	0.7	5
Codpiece length	x2	1.8	12.5
The length of the tuck on the front half	X3	1.2	8.5
leaf width	X4	0.2	1.5

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Distance from the top cut to the beginning of the entrance to the pocket	X5	0.9	6
The distance from the line of the hips to the lower edge of the leaflet	X6	1.1	6.6
Length trousers	X7	12	80
Horizontally			
The position of the waist tuck in relation to the middle seam on the front half	U1	0.7	5
Belt buckle width	U2	0.7	5
The position of the waist tuck in relation to the middle seam on the back half	U3	0.6	4.5
Belt loop width	U4	0.1	0.6
Pocket entry width	U5	1.8	12
Codpiece Width	U6	0.4	3
Jacket			
Vertically			
The position of the end of the waist tuck relative to the chest line	X1	0.5	3.3
Distance from the waist line to the top edge of the pocket	x2	0.7	5.2
The position of the end of the waist tuck relative to the chest line	X3	0.5	3.5
Distance from the waist line to the inflection point of the lapel	X4	0.1	1.3
The position of the bottom edge of the pocket relative to the hip line	X5	0.4	3
Spline length	X6	2.3	15
Pocket length	X7	2.4	16
Back collar width	x8	0.6	4.6
The position of the shoulder tuck in relation to the end of the shoulder seam	x9	1.1	7.8
Length of the product	x10	10.6	70
The length of the sleeve	X11	8.2	58
The position of the end of the waist tuck on the back relative to the line of the hips	X12	0.5	3.5
Waist tuck length	X13	4.7	31.5
Distance from chest line to end of lapel	X14	2.5	17
Distance from the chest line to the point where the collar is sewn into the neck	X15	2.04	13.5
Horizontally			
Shoulder slope width	U1	2	13
Button diameter	U2	0.3	2
Sweep Width	U3	0.7	5
Distance between button centers	U4	0.9	6
Bead width	U5	0.8	5.5
Distance from pocket to half-drift line	U6	1.3	8.5
Distance from bead line to finishing stitch	U7	0.07	0.5
Distance the pocket extends beyond the tuck	U8	0.2	1.5
Back collar width	U9	0.7	5
Distance from the half-skid line to the point where the collar is sewn into the neck	U10	0.3	2.5
Distance from the half-skid line to the end of the lapel	U11	1.06	7
Angle measurements			
lapel angle	Angle a		60°
Clasp opening angle	Angle b		20°

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The result of the analysis is a drawing of a general view of the designed product of the jacket and trousers.

Drawings of the general view of the jacket and trousers are shown in figures 13 and 14, respectively.

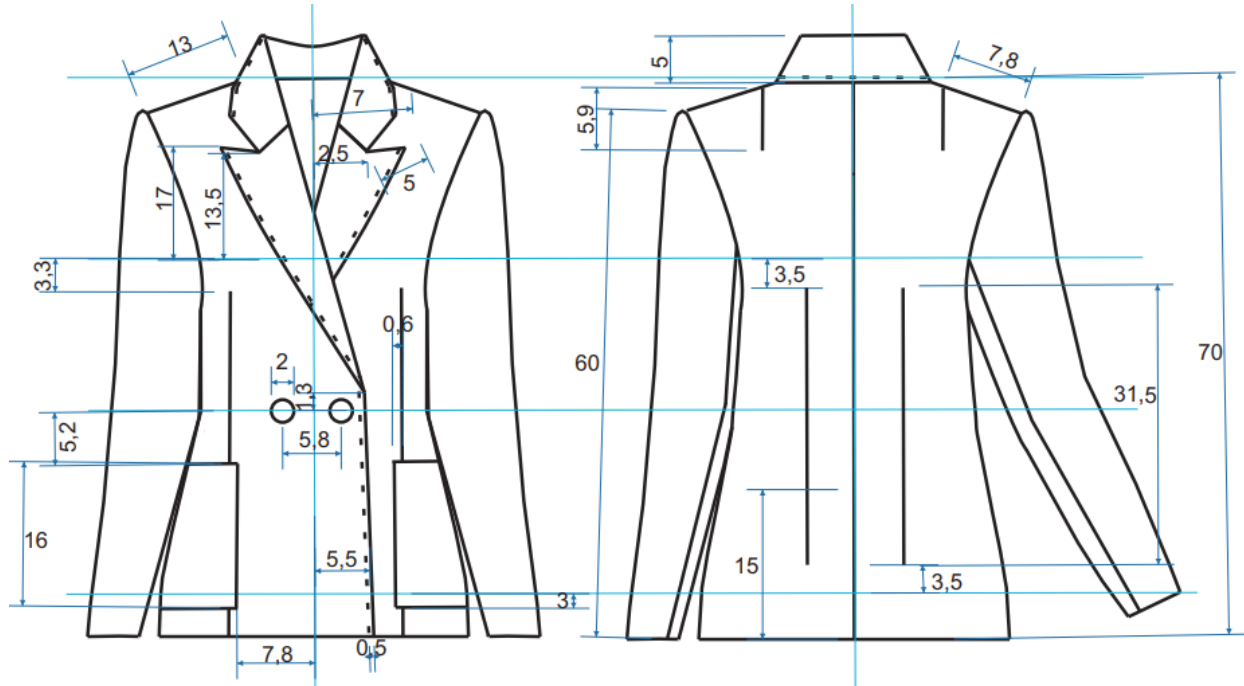


Figure 13 - General view drawing of the designed jacket model

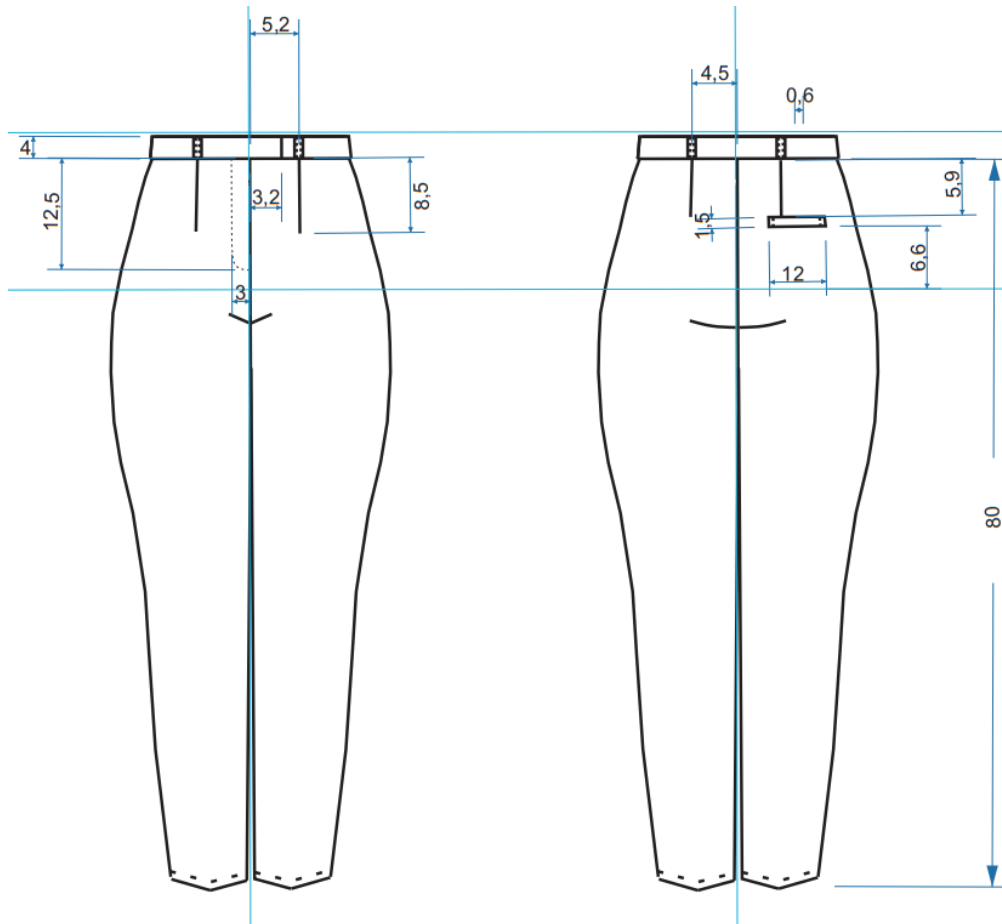


Figure 14 - General view drawing of the designed model of trousers

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Selection of initial data for model design

A unified method was chosen to develop the designed model of the suit.

designing women's clothing, made according to individual orders of the population for figures of various body types (parts 1,2) of the Central Experimental and Technical Sewing Laboratory (TsOTSHL). This method is based on data obtained as a result of anthropological studies on the typology of the population. The TsOTSHL method provides the construction of drawings of clothing details of any models and shapes, makes it possible to develop various cuts. All designs and a set of patterns are built without seam allowances.

When developing the designed model of a suit, consisting of a jacket and trousers, the calculation and

graphic method of designing TsOTSHL was chosen, since this method is used when designing clothes for an individual figure.

A feature of the unified TsOTSHL method is the division of the design process into 3 stages:

- building the basis of the product;
- development of a new form based on the basis;
- development of model diversity of form.

Calculation and graphical methods for constructing drawings of clothing details provide for the dimensional characteristics of a human figure and an allowance for free fitting as initial data.

As the initial information, windows from the PPP AP clothing are presented with the choice of "Reproduction parameters", "Dimensional characteristics", and "Formulas" in accordance with Figures 15 - 18., respectively.

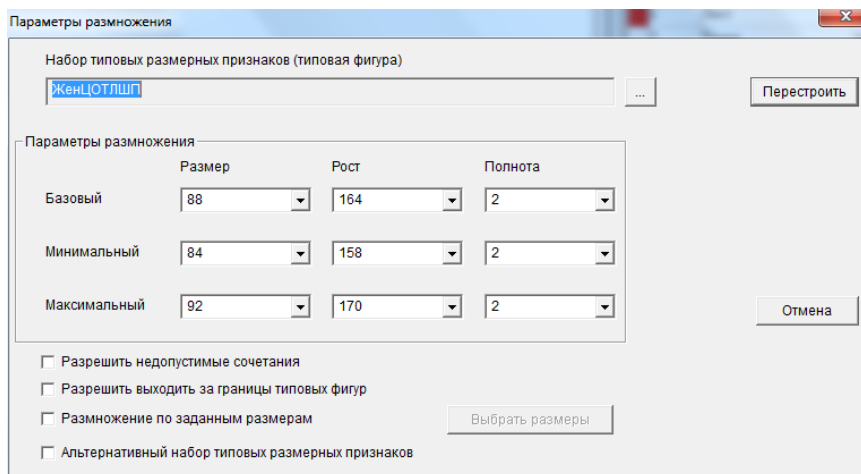


Figure 15 - Screenshot of the "Reproduction Parameters" window for developing an algorithm for constructing a women's jacket and trousers.

N	Пояснение	Обозначение	Формула	Значение
1	Рост	P	164.	164.
2	Полуобхват шеи	Cш	17.7	17.7
3	Полуобхват груди первый	Cr1	42.9	42.9
4	Полуобхват груди второй	Cr2	46.4	46.4
5	Полуобхват груди третий	Cr3	44.	44.
6	Полуобхват талии	Cт	33.8	33.8
7	Полуобхват бедер	Cб	48.	48.
8	Ширина груди	Шг	16.5	16.5
9	Длина талии спинки 2	Дтс2	42.7	42.7
10	Длина талии переда 2	Дтп2	43.2	43.2
11	Высота груди	Вг2	25.4	25.4
12	Высота проймы сзади 2	Впрз2	20.9	20.9
13	Высота плеча косая	Впк2	42.6	42.6
14	Ширина спины	Шс	17.3	17.3
15	Ширина плечевого ската	Шп	13.1	13.1
16	Обхват плеча	Оп	27.5	27.5
17	Обхват запястья	Озап	15.9	15.9
18	Глубина талии первая	Гт1	5.3	5.3
19	Глубина талии вторая	Гт2	5.2	5.2

Figure 16 - The "Dimensional Features" window (fragment, women's jacket) for developing an algorithm for constructing a women's jacket and trousers

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N	Пояснение	Обозначение	Формула	Значение
20	Прибавка к обхвату бедра	Пб	2	2.
21	Прибавка к обхвату талии	Пт	0,5	0,5
22	Прибавка к обхвату бедра	Пбед	4	4.
23	Прибавка к высоте сидения	Пдс	1,5	1,5
24	Расстояние от линии тали до пола сбоку	Дсб	107	107.
25	Расстояние от линии талии до пола сзади	Дсз		
26	Расстояние от линии талии до пола спереди	Дсп		
27	Расстояние от линии талии до плоскости сидения	Дс	26,3	26,3
28	Выступ ягодиц относительно талии	Вят	4,5	4,5
29	Выступ живота относительно талии	Вжт	1,5	1,5
30	Обват бедра	Обед	60	60.
31	Ширина брюк внизу	Шн	15	15.
32	Ширина брюк на уровне колена	Шк	19	19.

Figure 17 - Screenshot of the "Formulas" window for developing an algorithm for constructing women's trousers (fragment)

N	Пояснение	Обозначение	Формула	Значение
20	Ширина груди вторая	Шг2	18,7	18,7
21	Раствор плечевой вытачки	р.вытачки	2	2.
22	Прибавка на свободу по линии груди	Пг	5	5.
23	Прибавка на свободу по линии талии	Пт	8	8.
24	Прибавка на свободу по линии бедер	Пб	4	4.
25	Прибавка на свободное облегание к ширине спинки	Пшс	0,95	0,95
26	Прибавка на свободное облегание к ширине переда	Пшп	0,55	0,55
27	Прибавка на свободное облегание к ширине горловины переда	Пшгор	0,3	0,3
28	Прибавка на свободное облегание к глубине горловины переда	Пггор	0	0.
29	Прибавка к длине талии спинки	Пдтс	0	0.
30	Прибавка к высоте горловины спинки	Пвгс	0,2	0,2
31	Прибавка на свободу проймы по глубине	Пспр	3	3.
32	Прибавка на плечевую накладку	Ппн	0,5	0,5
33	Прибавка к длине талии переда	Пдтп	Пдтс+0,5	0,5
34	Прибавка к высоте плеча косой	Пвпк	Пдтс+Ппн+0,5*0,5+0,5	1,25
35	ширина сетки	A0a1	Cr3+Пг	49.
36	ширина спинки	A0a	Шс+Пшс	18,25
37	ширина переда	a1a2	Шг+(Cr2-Cr1)+Пшп	20,55
38	ширина проймы	aa2	A0a1-a1a2-A0a	10,2
39	Отвод ср. линии спинки от вертикали на уровне линии талии	отвод	1,5	1,5
40	Уровень лопаток	A0y	0,4*Дтс2	17,08
41	Уровень глубины проймы	A0Г	Впрз2+Пспр+0,5*Пшгор	24,05
42	Уровень линии талии	A0T	Дтс2+Пдтс	42,7

Figure 18 - Screenshot of the "Formulas" window for developing an algorithm for constructing a women's jacket (fragment)

Model design development

The development of model features was carried out using well-known methods of constructive modeling, the results of the analysis of the model and the general view drawing were also taken into account.

Changes to the BOC of the jacket drawing were made in accordance with the first type of constructive modeling, namely:

– breast tucks were moved to waist darts on the front;

- the location and shape of patch side pockets are determined;

- location and number of buttons;

– collar configuration;

Constructive modeling of trousers consists in determining the width of the stitched belt and the location, shape and size of the leaflet.

A drawing of the model design of the designed model of the set-in sleeve, jacket and trousers is presented in accordance with figures 19 - 20.

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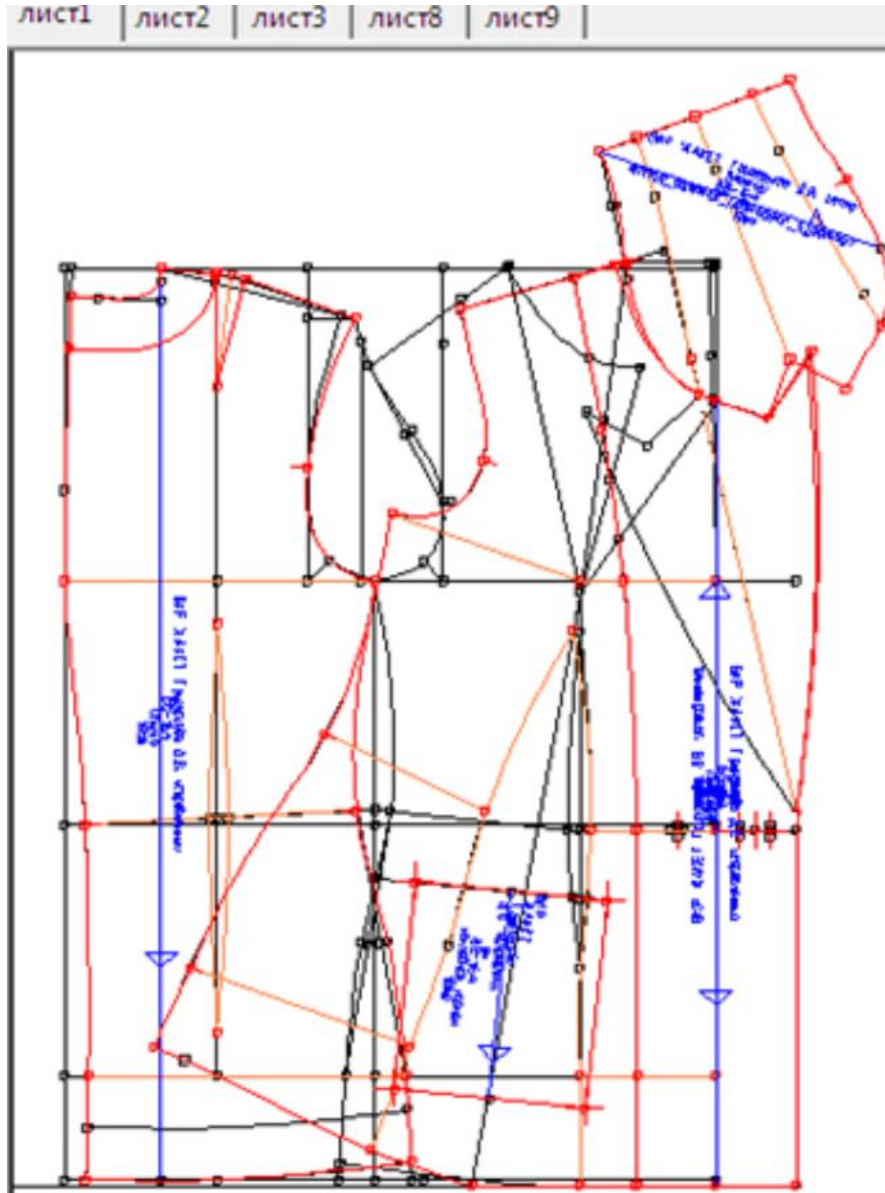


Figure 19 - Model design of the jacket using the Grace CAD software

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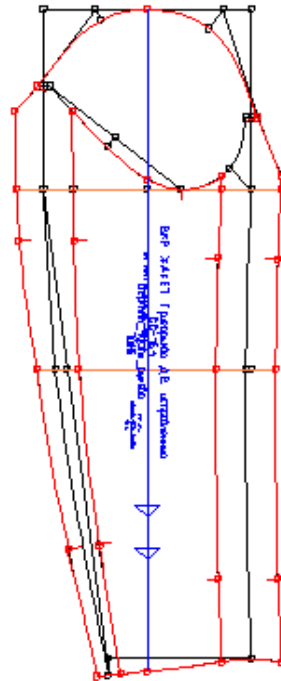


Figure 20 - Model design of a set-in sleeve using the PPP CAD "Grace"

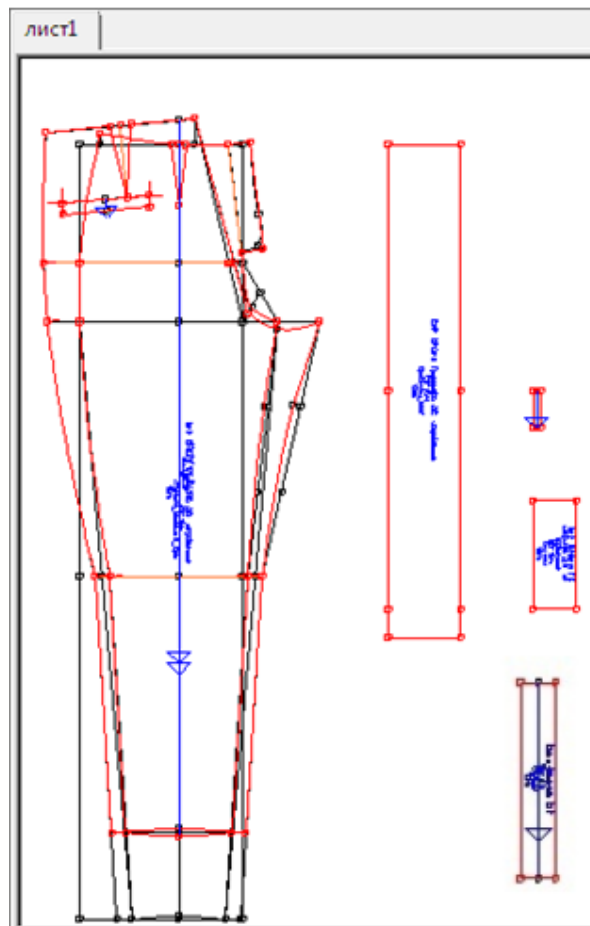


Figure 21 - Model construction of trousers using the Grace CAD software application

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	GIF (Australia) = 0.564	ESJI (KZ) = 8.771	IBI (India) = 4.260
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Checking the design in the layout

An important step in the technological process of manufacturing clothes for individual orders of the population is the fitting of the product on the figure of the customer. The purpose of fitting the layout is to achieve the conformity of the type of product with the shape of the figure, satisfy the customer's requests and accurately execute the model of the product, clarify the shape of the product and the placement of decorative elements on it.

Before cutting out the patterns of each part, we checked for conjugacy of lines and overlapping of the same-name slices, the position of control signs, and clarified the configuration of the slices in the initial and final sections. Next, the details were cut out and the main structural lines and the lapel fold line were applied to them.

We made a layout of the designed model of a women's suit by sweeping and sweeping the side and shoulder sections of the prepared parts. The collar and right sleeve were worn in. Adopted shoulder pad. The basting of patch pockets and the location of the buttons has been completed.

During the fitting, the fit of the product on the figure, the shapes and proportions of the parts of the product, the dimensions of the decorative and finishing parts and their placement on the product were specified.

During the first fitting, the general shape of the product and its parameters were specified. The silhouette of the product is refined by comparing the appearance and dimensions of the product being tried on with a sample model, photograph and analysis of the designed model.

We checked the length and width of the made model sample, the shape of the sleeve and its position in the armhole.

We checked the position of the collar in the neck and corrected its shape and dimensions, checked the position of the ledge and the fold of the lapels.

Clarified the position and dimensions of the side pockets.

Checked product balance.

In the course of trying on a sample layout of the projected jacket model, adjustments were made: the configuration of the collar and lapel was changed, the shape of the neckline on the back was changed, and the width along the hip line was also reduced by 3 cm.

When trying on the model of trousers, no shortcomings were identified, but it was decided to increase the width of the belt to 5 cm and reduce the length of the trousers by 4-5 cm.

Then we made all the changes to the layout and patterns of the product, identified during the first fitting.

Technical project

The main goal of the technical project was the selection and justification of the final design and technological solutions for the designed product. At this design stage, the following types of work were carried out: a rational package of materials for the product was selected; a confection map was drawn up; the specification of patterns and details of the cut of the designed product was completed.

Selection of a rational package of materials for the product

The main, lining and cushioning materials were selected based on the properties of the materials specified in the Terms of Reference, the type and purpose of the product.

When selecting materials, the knowledge and skills acquired during the course "Confectioning of materials" were used.

The characteristics of the materials used in the manufacture of the product are presented in accordance with Table 7.

Table 7. Characteristics of the materials used in the manufacture of the model

Material type	Name	Fiber composition	
		O	At
Main material	Jeans	Cotton+Elastane	Cotton+Elastane
lining material	Viscose	Viscose	Viscose
Gasket material	Interlining	Viscose	Viscose

The table of measures is a technical document that regulates the conformity of the dimensions of the details of the finished product with the dimensions of the corresponding patterns.

The list of places for measuring parts includes such a number of items that guarantees the compliance

of the manufactured products with the designed model.

models. Figures 22 - 23 show the "Task for the development of a table of measures" window for trousers and a jacket.

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N	Пояснение	Обозначение	Формула	Значение	Прим.
1	Длина изделия	Ди	Ди	70.	
2	Длина рукава	Друк	Друк	55.	
3	Ширина горловины спинки	A0`A2	A0`A2	6.7	
4	Длина проймы	Дпр	Дпр	45.2	
5	Ширина рукава в готовом виде	Шр	Шр	17.45	
6	Длина талии спинки 2	Дтс2	Дтс2	42.7	
7	Длина талии переда 2	Дтп2	Дтп2	43.2	
8	Ширина плечевого ската	Шп	Шп	13.1	
9	Ширина спины	Шс	Шс	17.3	
10	ширина переда	a1a2	a1a2	20.55	
11	ширина спинки	A0a	A0a	18.25	
12	Уровень линии талии	A0T	A0T	42.7	

Figure 22 - Screenshot of the window "Assignment for the development of a sheet of measures" for the designed model of the jacket (fragment) in the PPP CAD "Grace"

N	Пояснение	Обозначение	Формула	Значение	Прим.
1	Ширина брюк внизу	Шн	Шн	15.	
2	Ширина брюк на уровне колена	Шк	Шк	19.	
3	Расстояние от линии тали до пола сбоку	Дсб	Дсб	107.	
4	длина изделия	Ди	Ди	95.5	
5	Расстояние от линии талии до плоскости сидения	Дс	Дс	26.3	

Figure 23 - Screenshot of the window "Tasks for the tabel of measures" for the designed model of trousers (fragment) in the CAD "Grace" PPP

Since CAD "Grace" was used in the work, it is possible to automatically recalculate the algorithm and the entire structure to the individual parameters of any customer.

The developed pattern templates from the main fabric are presented in accordance with figures 24 and 25.

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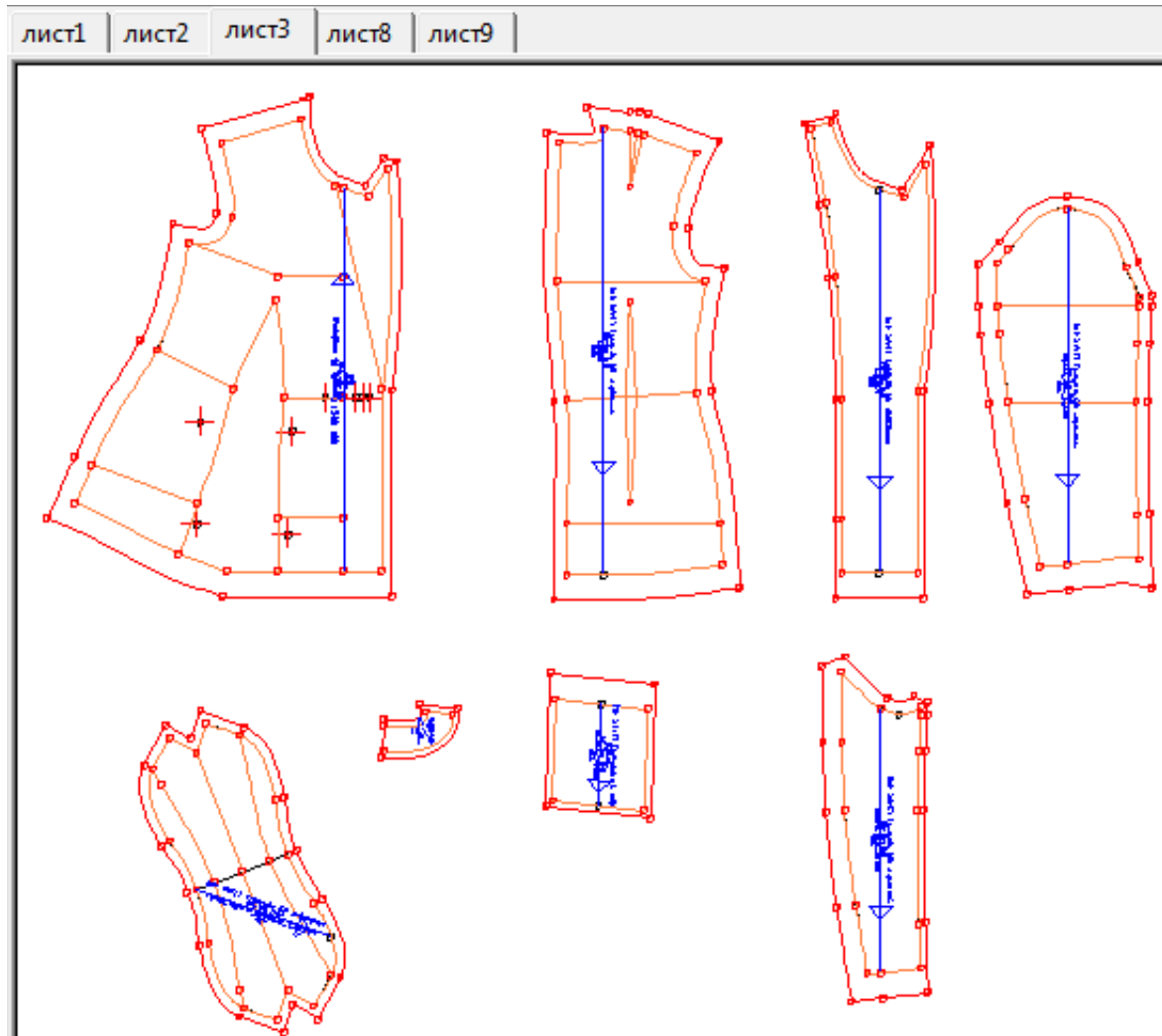


Figure 24 - Patterns of patterns for the details of the designed model of the jacket from the main fabric in CAD "Grace" (version 401)

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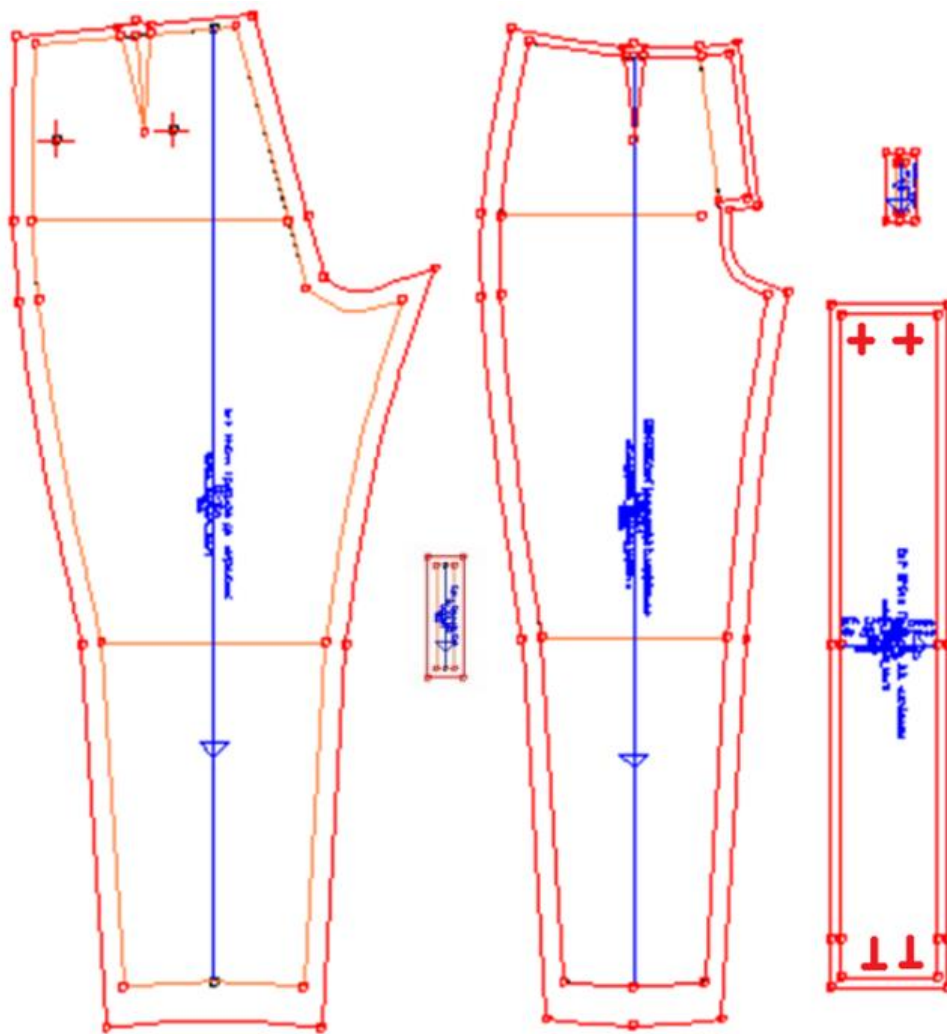


Figure 25 - Templates for patterns of details of the designed model of trousers from the main fabric in CAD "Grace" (version 401)

Construction of working drawings of patterns of derived parts

Drawings of templates of derived parts of the designed model are developed on the basis of drawings of templates of the main parts using

construction schemes, taking into account the properties of materials, processing methods and equipment.

Figure 26 shows templates for patterns of parts for lining material for trousers.

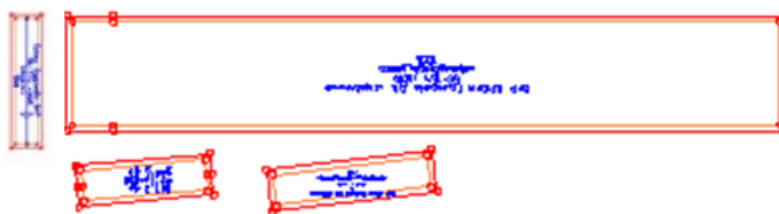


Figure 26 - Templates for patterns of details of the designed model of trousers made of cushioning fabric in CAD "Grace" (version 401)

Figure 27 shows templates for patterns of lining material for a jacket.

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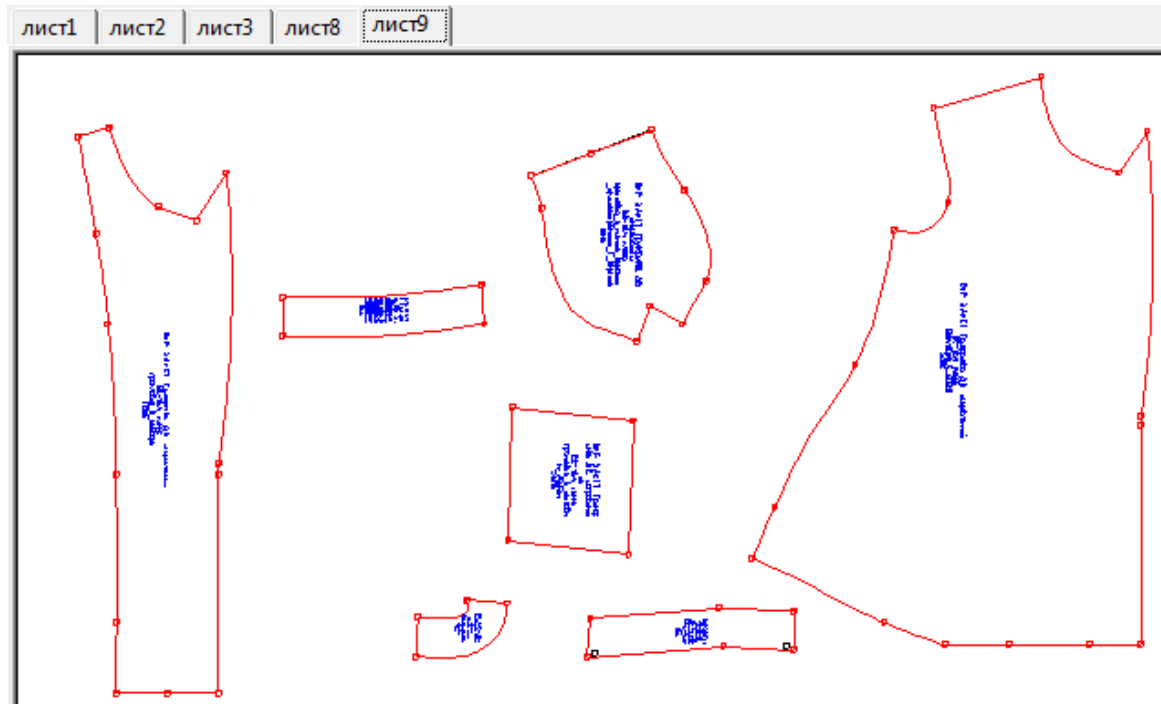


Figure 27 - Templates for patterns of details of the designed model of a jacket made of cushioning fabric in CAD "Grace" (version 401)

Figure 28 shows templates for patterns of lining material for a jacket.

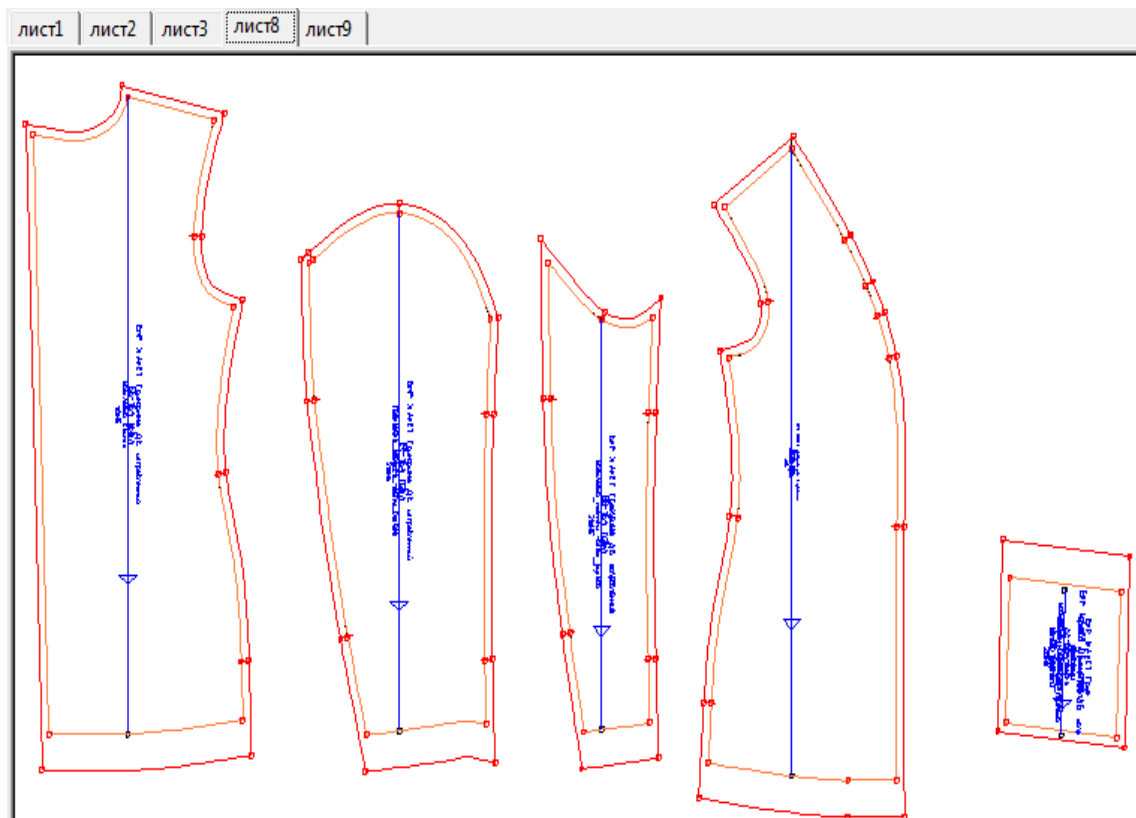


Figure 28 - Templates for patterns of details of the designed model of a jacket made of cushioning fabric in CAD "Grace" (version 401)

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 JIF = 1.500

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 ПИИЦ (Russia) = 3.939
 ESJI (KZ) = 8.771
 SJIF (Morocco) = 7.184

ICV (Poland) = 6.630
 PIF (India) = 1.940
 IBI (India) = 4.260
 OAJI (USA) = 0.350

The development of a task for the layout in the PPP CAD "Grace" is shown in Figure 29 using the

example of a task for the layout of patterns from the base material.

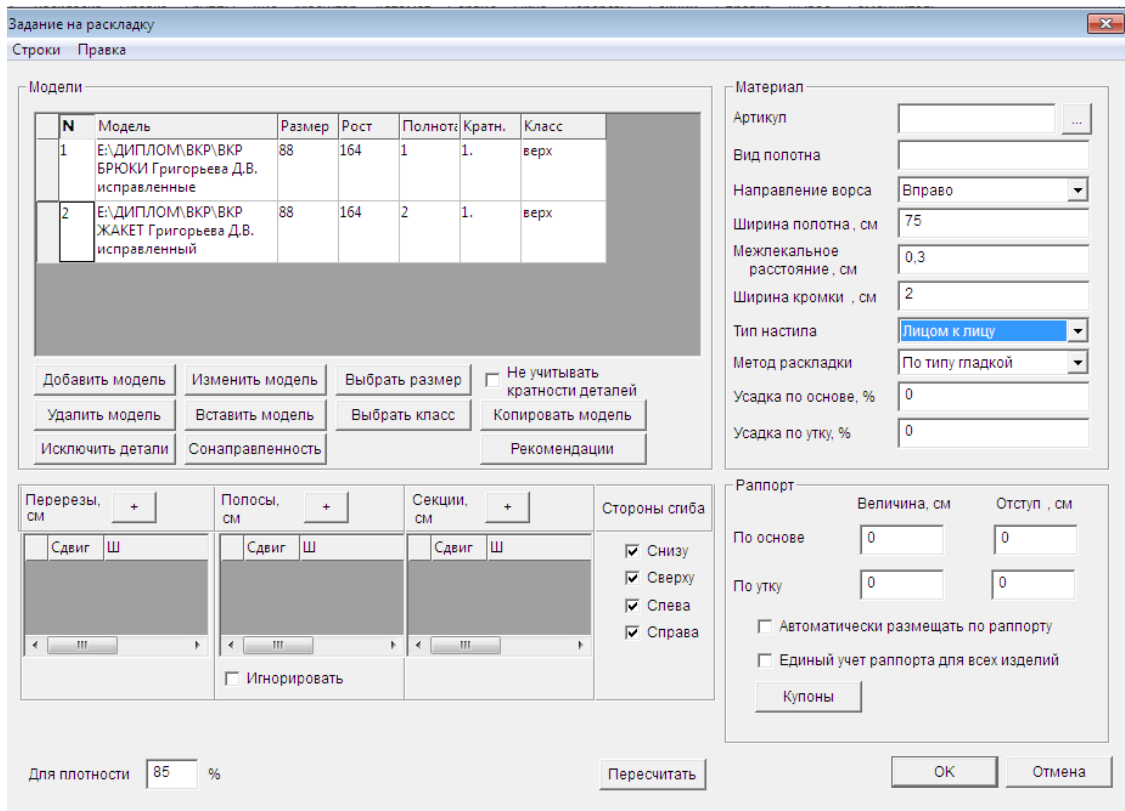


Figure 29 - Screenshot of the window "Task for nesting" patterns from the base material in the PPP CAD "Grace" (version 401)

The layout of the patterns of the details of the women's suit from the base material is presented in accordance with Figures 30 and 31.

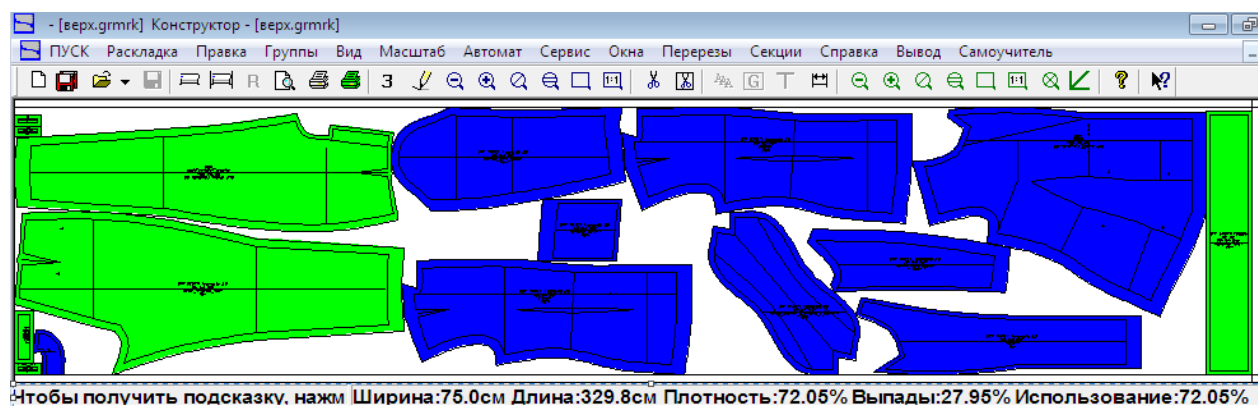


Figure 30 - Development of the layout of templates for patterns of a women's suit from the main material in the software application of CAD "Grace" (version 401) in an automated way

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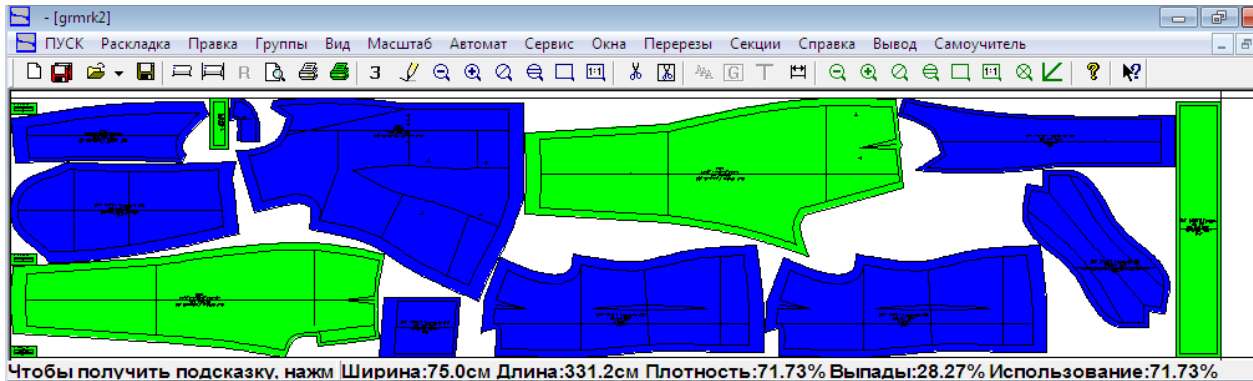


Figure 31 - Development of the layout of templates for patterns of a women's suit from the base material in the software application of CAD "Grace" (version 401) manually

The layout of the patterns of the details of the women's suit from the lining material is presented in accordance with figures 32 and 33.

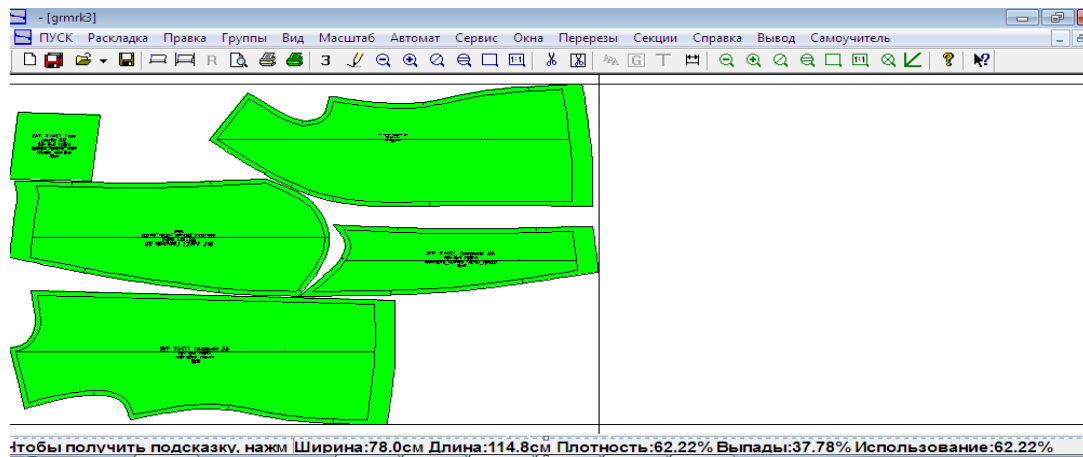


Figure 32 - Development of the layout of templates for patterns of a women's suit from the lining material in the software application of CAD "Grace" (version 401) in an automated way

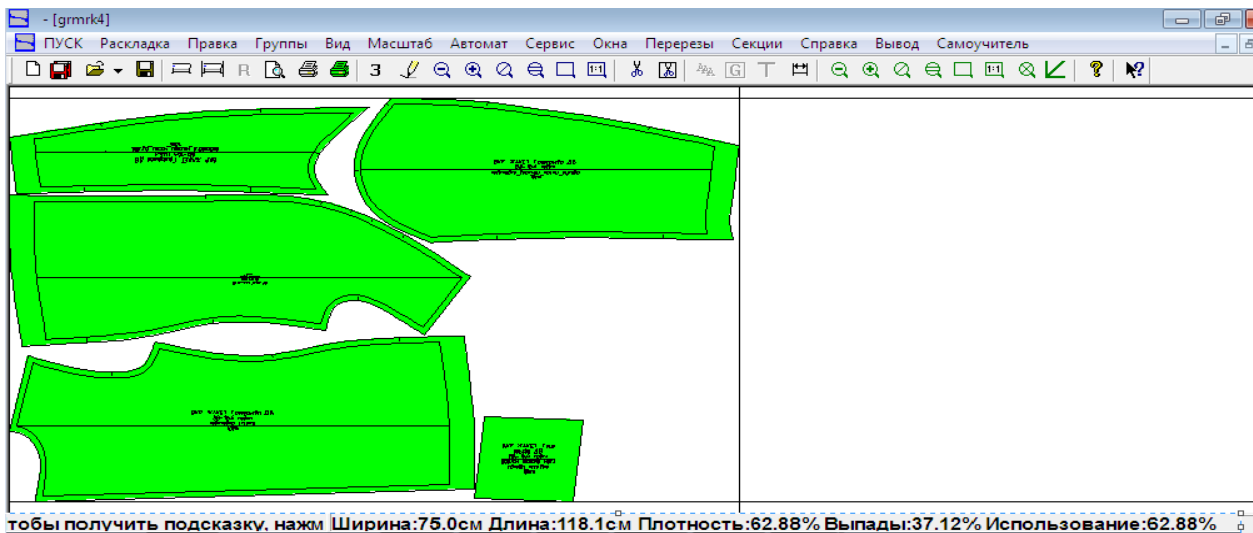


Figure 33 - Development of the layout of templates for patterns of a women's suit from the lining material in the software application of CAD "Grace" (version 401) manually

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The layout of the patterns of the details of a women's suit made of cushioning material is presented in accordance with Figures 34 and 35.

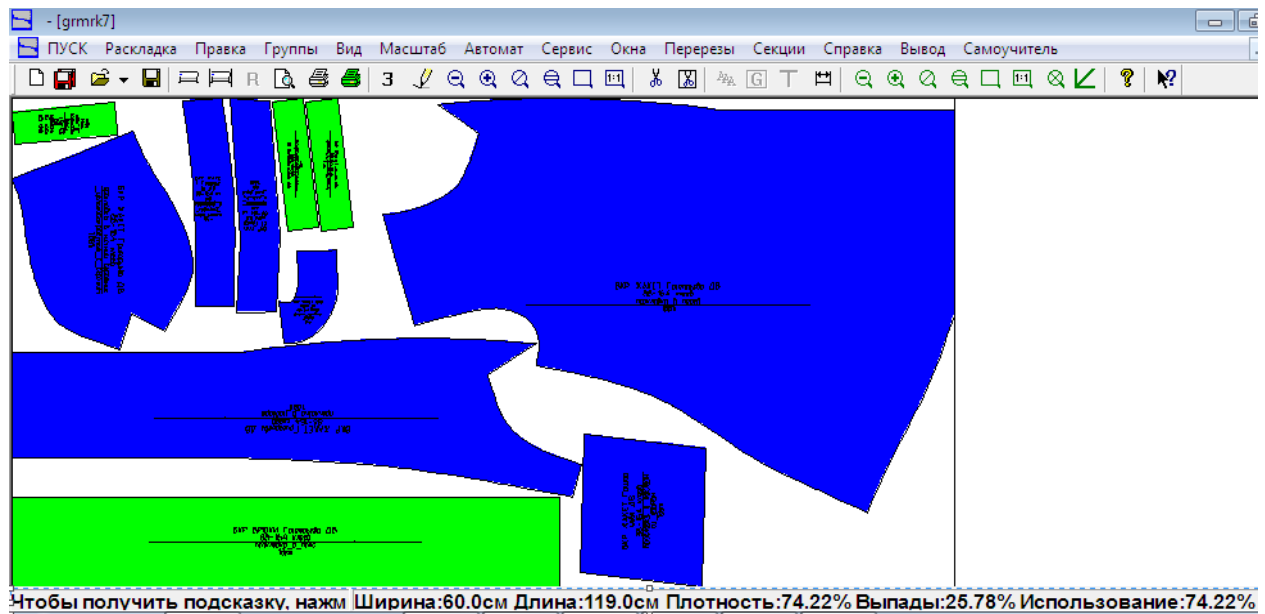


Figure 34 - Development of the layout of templates for patterns of a women's suit from a cushioning material in the software application of CAD "Grace" (version 401) in an automated way

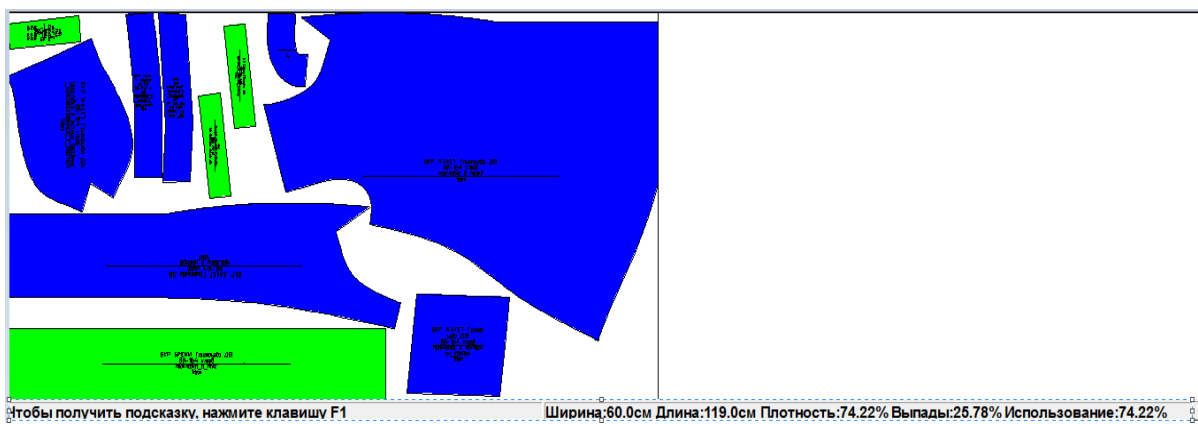


Figure 35 - Development of the layout of templates for patterns of a women's suit from cushioning material in the software application of CAD "Grace" (version 401) manually

The list of all materials and fittings is presented in accordance with table 8.

Table 8. Specification of materials and fittings

Material name	Purpose of the material	unit of measurement	Product cost	Note
1	2	3	4	5
Jeans	Main material	m	3.29	With a width of 150 cm and an edge of 2 cm
Viscose	lining material	m	1.17	With a width of 150 cm and an edge of 2 cm
dublerin	Gasket material	m	1.19	With a width of 120 cm

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Reinforced threads "Gutermann"	bonding material	kt	3	-
Jacket buttons	Finishing	PCS	3	Two buttons with a diameter of 2 cm and one button with a diameter of 1.5 cm
Trouser buttons	Finishing	PCS	2	Diameter 1.5 cm
Shoulder pads	Shoulder pads	PCS	2	Thickness 1.5cm
Braid - lightning	Finishing	PCS	1	19 cm

Development of a gradation scheme for the patterns of the main parts of the product

In CAD "Grace" (version 401) there is no need for the technological stage of pattern gradation, since the system itself creates patterns of all size and height

options by calculating and building a pattern for each size.

An example of rebuilding a template - backrest patterns in size and height is shown in accordance with Figures 36 - 39.

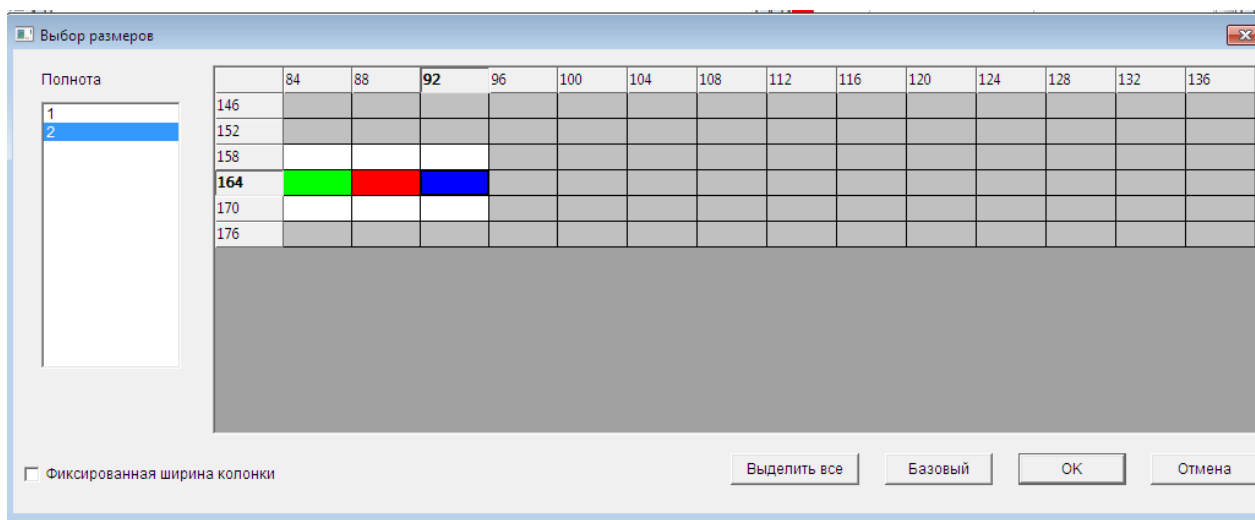


Figure 36 - Task for the gradation of templates for patterns of a women's suit by height in the software application of CAD "Grace" (version 401)

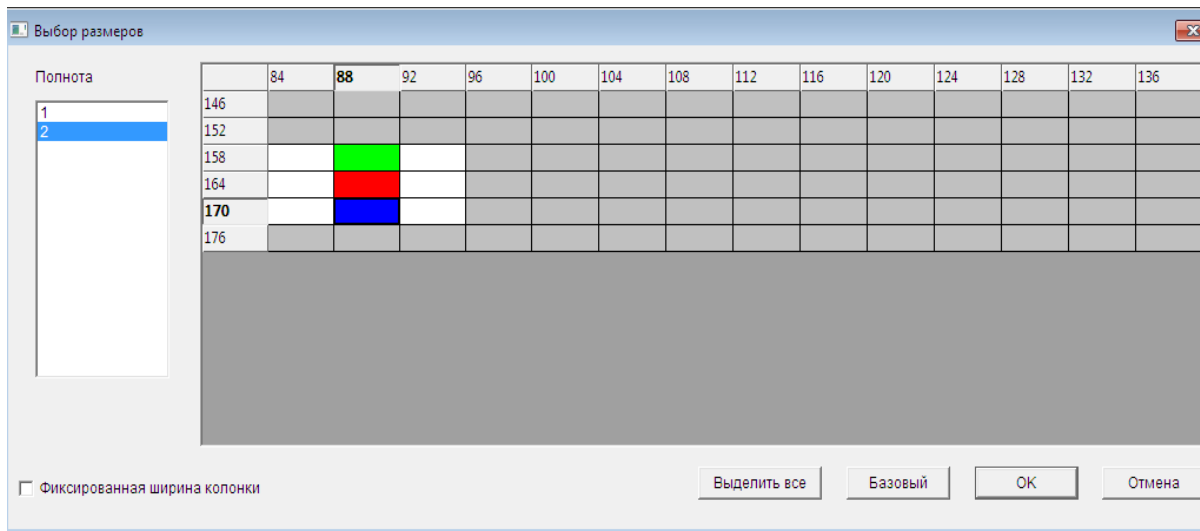


Figure 37 - Task for the gradation of templates for patterns of a women's suit by size in the PPP CAD "Grace" (version 401)

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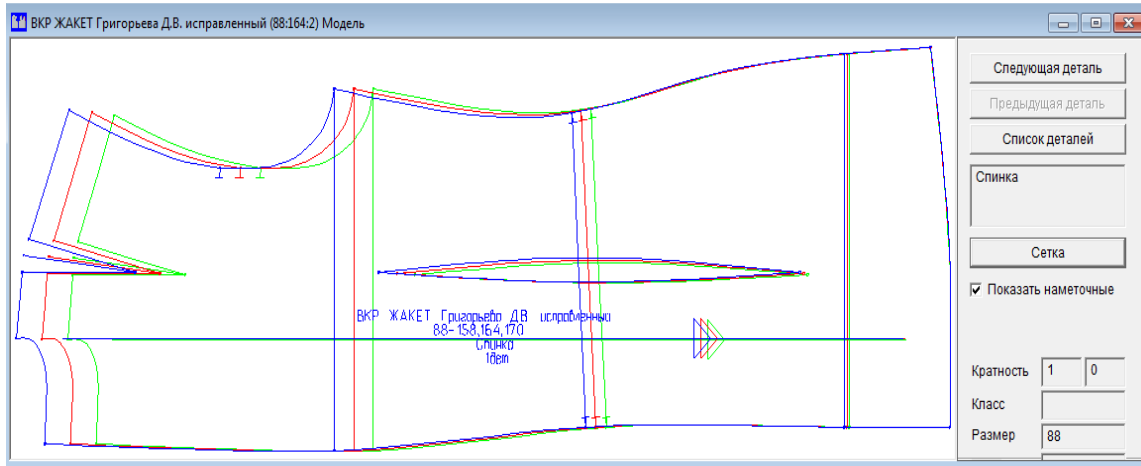


Figure 38 – Gradations of the template of the backrest pattern according to heights in the PPP CAD "Grace" (version 401)

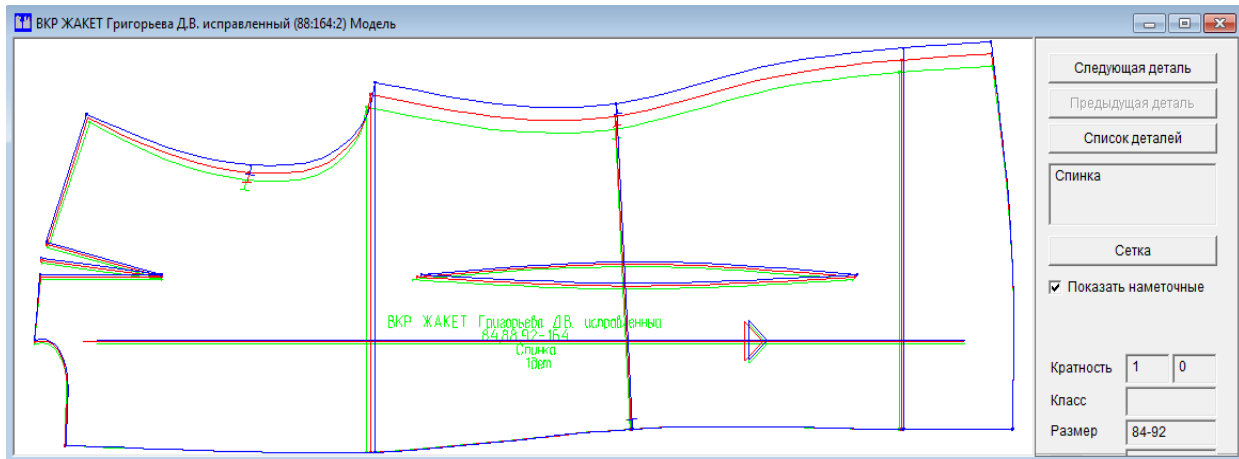


Figure 39 - Gradations of the backrest pattern template by size in the PPP CAD "Grace" (version 401)

Conclusions on the section: in this section, an analysis of fashion trends was carried out, requirements were formulated both for materials and for clothing in general. A rational package of materials was selected, fashionable fabrics were proposed, their texture, the color scheme of which corresponds to the fashionable direction and is quite applicable to the considered range of clothing. A sketch of the designed model of the costume was developed, compiled. The analysis and study of the model was carried out, a model design was developed. The specification of

patterns has been developed. Patterns of patterns for the main details of clothing have been developed. The rationality of using CAD was revealed, since the program greatly simplifies the work of the designer.

Product Assembly Sequence Diagram

The assembly scheme of the jacket for fitting is shown in Figure 40.

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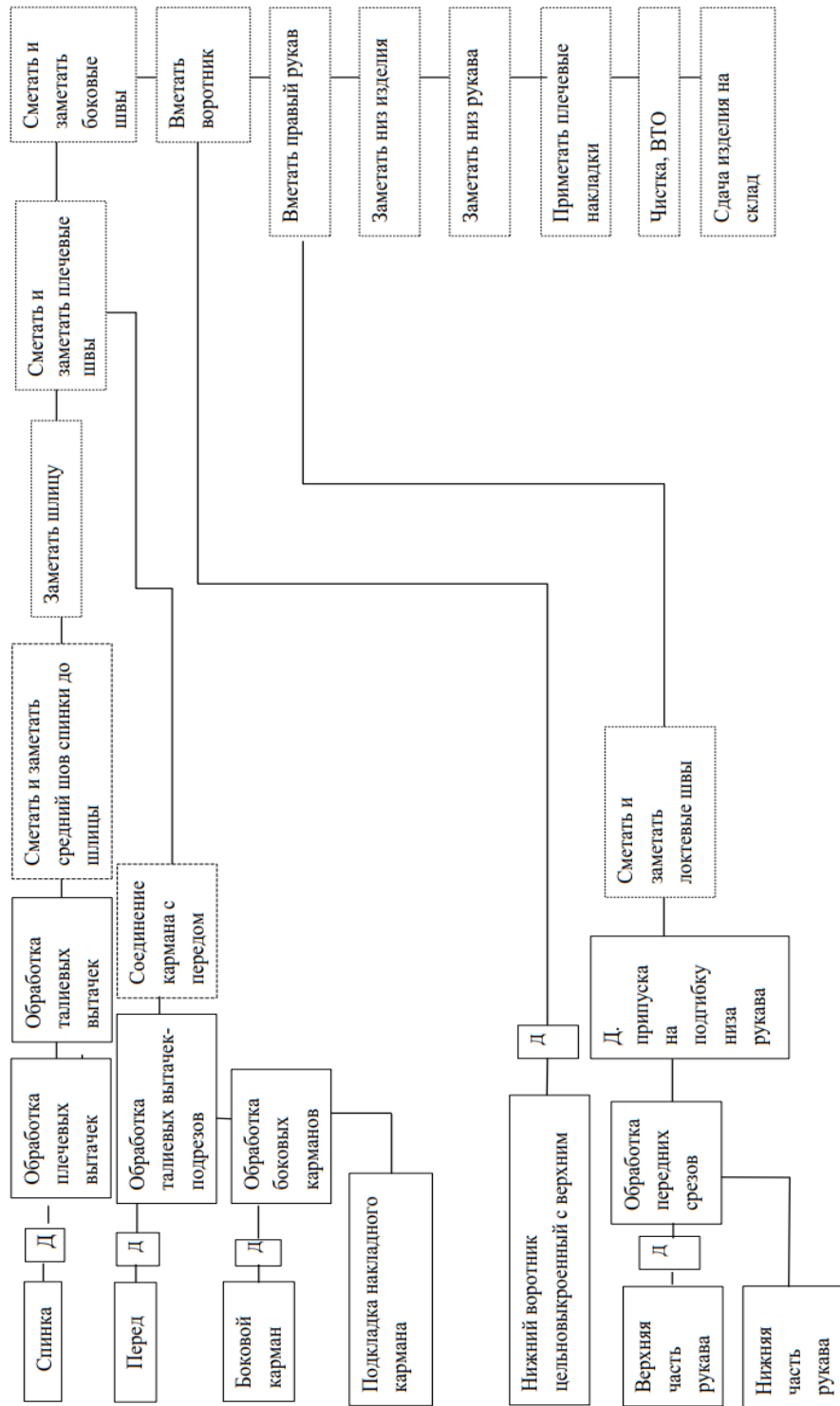


Figure 40 - Scheme of assembling a jacket for fitting

The assembly scheme of the jacket after fitting is shown in Figure 42.

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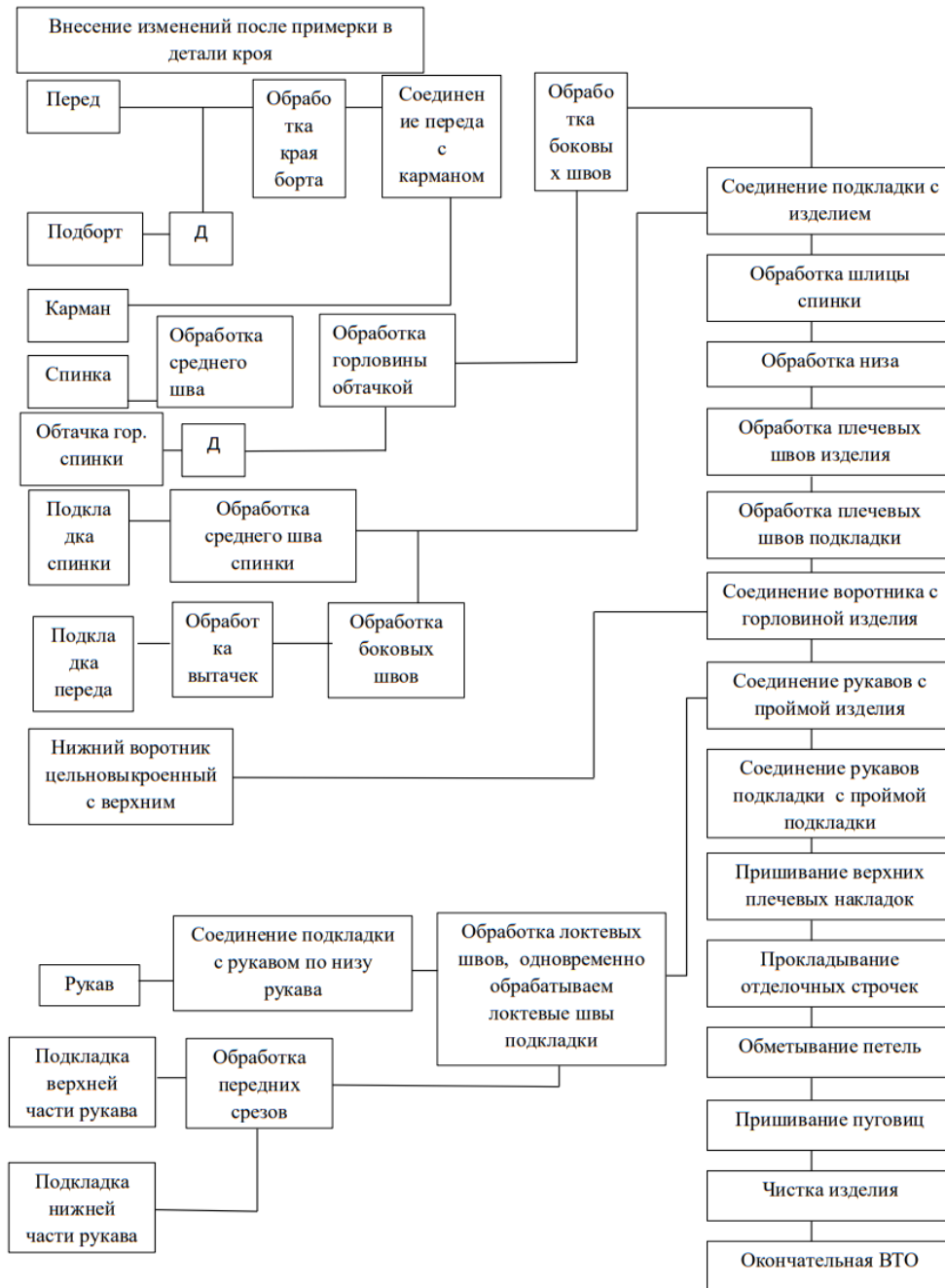


Figure 41 - Scheme of the assembly of the jacket after trying on

The assembly diagram of trousers without trying on is shown in Figure 42.

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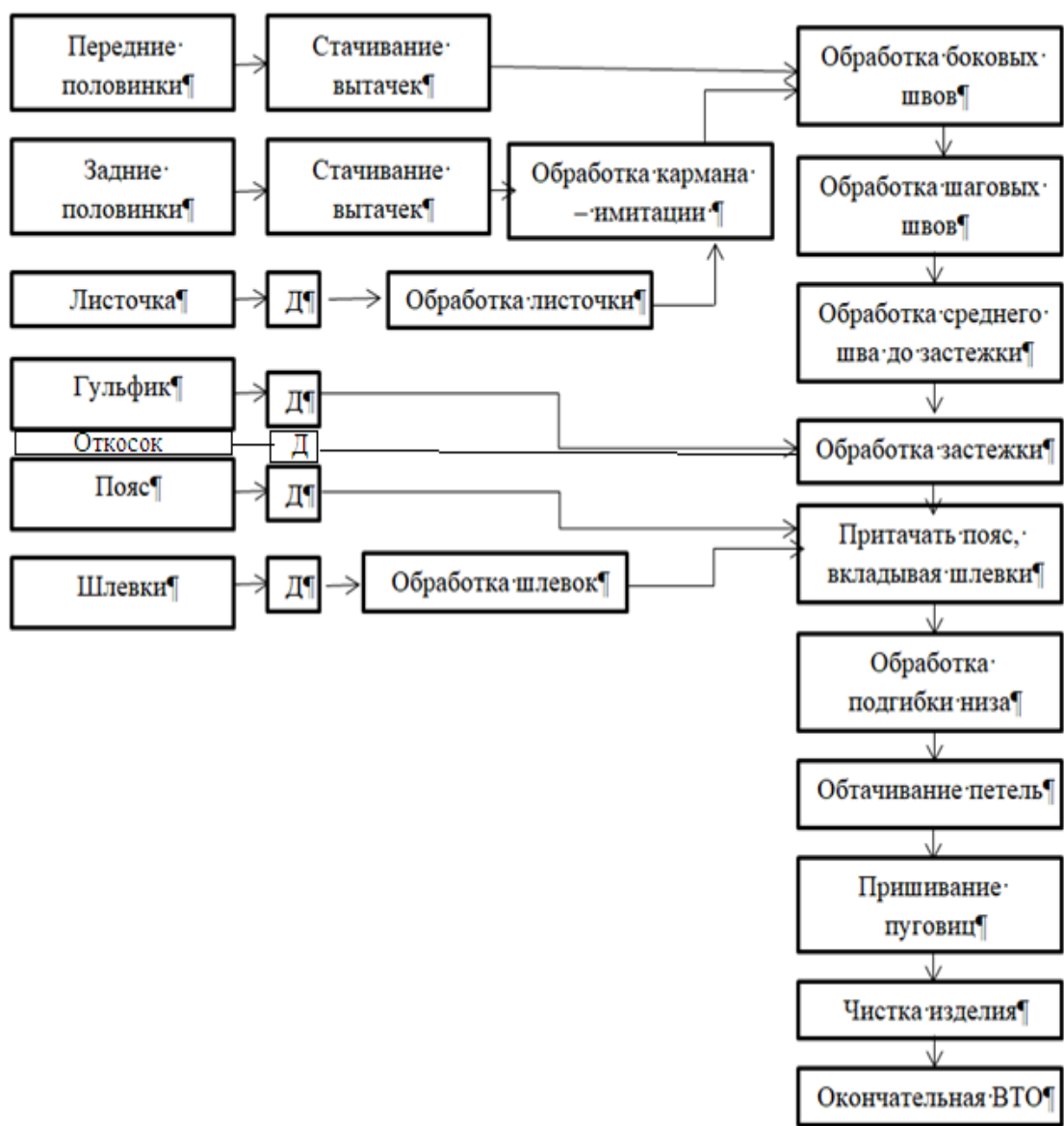


Figure 42 - Pants Assembly Diagram

Choice of processing methods

The assembly drawing contains complete information about the design and processing methods of all the main components of the designed product.

The assembly drawing of the jacket and trousers is presented in accordance with figures 43 and 44.

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The characteristics of the recommended equipment and devices for small-scale mechanization are presented in tables 9 - 11, respectively.

Table 9. Characteristics of sewing equipment

Purpose of equipment	Type of processed materials	Class, type, brand of equipment, manufacturer	Stitch type	Maximum number of stitches per minute	Maximum stitch length (loop length), mm	Max. material thickness	Material handling principle
Stitching, turning, stitching	Suit fabrics, lining fabrics	1022-M class. CJSC "PShM"	Two-strand shuttle	4500	5.0	5.0	Rack
Buttonholes	suit fabrics	62761-SM class.	Double thread zigzag	3600	33.0	12.0	Rack
Basting, basting, stitching	suit fabrics	2222 - M class. JSC "Orsha"	single thread chain	3000	12.0	8.0	Rack

Table 10. WTO equipment

Type, brand, manufacturer	Purpose of equipment	Heating temperature, °C	power, kWt	Steam consumption kw/h	Dimensions			Weight, kg
					Length	Width	height	
Electric steam iron UTP-2EP OZLK	Ironing, ironing, decanting, steaming	100-240	0.5-0.6	3	240	125	153	3.0

Table 11. Characteristics of small-scale mechanization devices

Operation Requirements	Device name	Fixture brand	Sewing machine class
Keeping the stitching parallel to the cuts of the parts to be machined	Foot with retractable guide ruler	1-44 (L-000) MOMZ TSNIISHP	1022-M class. CJSC Promshveimash

An important factor in increasing efficiency is the use of modern equipment, materials, processing methods; the choice of a rational method for forming knots, a technological and economical design, the use of one-piece parts (lower collar with an upper collar, one-piece facing on patch pockets, one-piece leaf), configuration of slices of parts (better stacking in the layout).

Conclusion

The main areas of activity in which the development of the clothing industry is currently being carried out in accordance with the adopted Strategy for the Development of Light Industry in Russia are considered.

The geographical features of the regions of the Southern Federal District and the North Caucasus Federal District and an estimate of the number of

children's population are given. The features that influence the formation of the range of children's clothing are analyzed. The principles of a competent assortment policy for the production of competitive children's clothing are determined, taking into account the factors affecting its consumer demand:

The requirements for children's clothing and determining its quality are analyzed, of which the most important are the safety requirements established by technical regulations of the Customs Union TR TS 007/2011, as well as requirements for materials, the chemical composition and structure of which determine all the basic properties of finished products, divided by nature into physical, chemical, mechanical, biological. Taking into account this factor, all the others are formed: design, technology, etc. Taking into account all kinds of requirements for clothing, it is noted that increasing the competitiveness of Russian

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industries in different markets is the production of clothes from natural organic materials, due to their undoubtedly better hygienic properties.

The influence of innovative technologies on the development of children's clothing production has been studied; recommendations are given on equipping the garment enterprises of the South with innovative equipment. The efficiency of enterprises, and in many respects their ability to survive in the competitive struggle, depends on the ability to quickly and cost-effectively reorganize production according to fluctuations in demand, the best opportunities for this are the development and implementation of flexible production systems. The restructuring and technical re-equipment of modern small and medium-sized production of children's clothing, as well as manufacturers of men's clothing with high-performance multifunctional equipment, should be facilitated by the widespread introduction of the practice of leasing schemes as the most optimal option for the development of Russian production.

Thus, the transition of the industry to an innovative development model focused on increasing its competitive advantages not only meets the vital needs of many regions of the Southern Federal District and the North Caucasian Federal District (reducing social tension, providing employment for the population, developing small and medium-sized businesses), but also contributes to the formation of a prosperous, an ecologically healthy childhood environment that satisfies social needs for a fulfilling life.

For the successful implementation of the proposed measures, a real interest in supporting the clothing enterprises of the South from the federal and regional branches of government is necessary, which should lead to a reduction in prices for components, materials, energy costs and transport, providing the manufacturer with the opportunity, due to the price niche, to offer the domestic consumer a demanded and competitive product. children's clothes. This can provide many manufacturers with stable positions not only in domestic, but, most importantly, in foreign markets. As a result of the research, a model design of a suit for women of younger age group of the size 164-84-92, of the second weight group, as well as technical documentation for its manufacture.

In the design and engineering section, at the stage of the technical assignment, a set of requirements for a women's suit and its technical documentation was developed. Based on these requirements and analysis of fashion trends for the current and future periods, a sketch of a designed female denim suit, developed using the CoreIDRAWX5 program, is presented. The description of appearance is made. At the stage of studying and analyzing models, data were obtained on the overall dimensions of the main parts and the location of model structural elements, on the basis of

which general view drawings of the designed product were developed. At the stage of studying and analyzing the model, data were obtained on the overall dimensions of the main parts and the location of the model structural elements, on the basis of which a drawing of a general view of the designed model of clothing for women of the younger age group was developed. In the CAD program "Grace 401" a model design of a women's suit was built.

At the stage of the technical project for the manufacture of the designed women's suit, a rational package of materials was selected that meets the requirements formulated in the terms of reference.

The parts were cut according to the patterns developed at the detailed design stage in accordance with the experimental layouts.

A model of the designed product was made, which made it possible to refine the design and make the necessary corrections.

In the technological section, the methods of shaping the designed set of clothes were determined. The proposed processing methods ensure the manufacture of high-quality products in the conditions of individual production. Improving Efficiency designed female costume achieved by choosing the optimal technological processing modes, drawing up rational schemes for assembling products.

The results of the studies performed confirm that the developed suit for women of the younger age group meets the stated requirements and is appropriate for introduction into production. To design and develop a model of a women's suit for the senior group, an analysis of the fashion direction for the promising season was carried out, the most relevant colors and silhouettes were identified.

After analyzing the direction of fashion, the requirements for the designed product and materials were studied and provided.

Based on the analysis of the fashion direction, the most advantageous version of the women's suit was chosen, which was necessary for the further production of the model, taking into account the individual characteristics of the customer.

Thanks to the analyzes done and the study of information in the literature and magazines, a draft design was developed and a description of the projected model was drawn up. The overall dimensions of the design details of the model were presented in the form of a table.

For further development of the design of the women's suit, an array of initial information was chosen in the form of a table of dimensional features and allowances for free fitting.

With the help of trying on a model of a women's suit, it was possible to carry out work to eliminate fit defects associated with the individual characteristics of the customer's figure. Based on this, a confection map and specification were drawn up, samples of materials and fittings were provided.

Impact Factor:

ISRA (India) = 6.317
ISI (Dubai, UAE) = 1.582
GIF (Australia) = 0.564
JIF = 1.500

SIS (USA) = 0.912
PIHII (Russia) = 3.939
ESJI (KZ) = 8.771
SJIF (Morocco) = 7.184

ICV (Poland) = 6.630
PIF (India) = 1.940
IBI (India) = 4.260
OAJI (USA) = 0.350

The following were produced: the development of derivative parts of a women's costume, which made it possible to determine the consumption of materials using layouts; development of gradation schemes for sizes and heights using the example of a jacket back detail.

To select processing methods and equipment, a characteristic of the shaping of the main parts was given, on the basis of which it was possible to develop an assembly drawing and assembly diagrams of the product before and after fitting.

Determining the economic efficiency of design development made it possible to calculate the cost of developing design and technological documentation, taking into account typical time standards for compiling documentation and spending both raw materials and materials.

According to the developed layout templates for patterns of women's costume parts in CAD "Grace" (version 401), both with the traditional (manual) and automated method of laying out parts, savings were determined while reducing the consumption of materials for the designed product, which made it possible to calculate the total price for the designed model and the savings were determined by reducing the consumption of each type of material for a women's suit, as well as the total.

Thus, we can conclude that the developed models of women's suits in the conditions of individual production fully comply with all the requirements and fashion trends. The products are suitable for everyday wear, as well as for office work and going out to events.

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