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Article



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FEATURES OF THE MANUFACTURE OF PRIORITY AND IN-DEMAND CLOTHING WITHIN THE FRAMEWORK OF THE FORMED TORUS. MESSAGE 2

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, implementation, paradigm, economic policy.

Language: English

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Introduction

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An analysis of fashion trends for the prospective period is shown in Figures 1 - 7, an analysis of

analogue models is presented in Table 1, and the appearance of the designed model of a women's suit is shown in Figure 1.

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Figure 1 - Collection of women's suits from the Hermes show 2021-2022.



Figure 2 - Women's suit collection from Ami 2021-2022

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Figure 3 - Collection of women's suits from the Nina Ricci show 2021-2022.



Figure 4 - Collection of women's suits from the Chanel show 2021-2022

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Figure 5 - Collection of women's suits from the Louis Vuitton show 2021-2022.



Figure 6 - The collection of women's suits from the Dior show 2021-2022.

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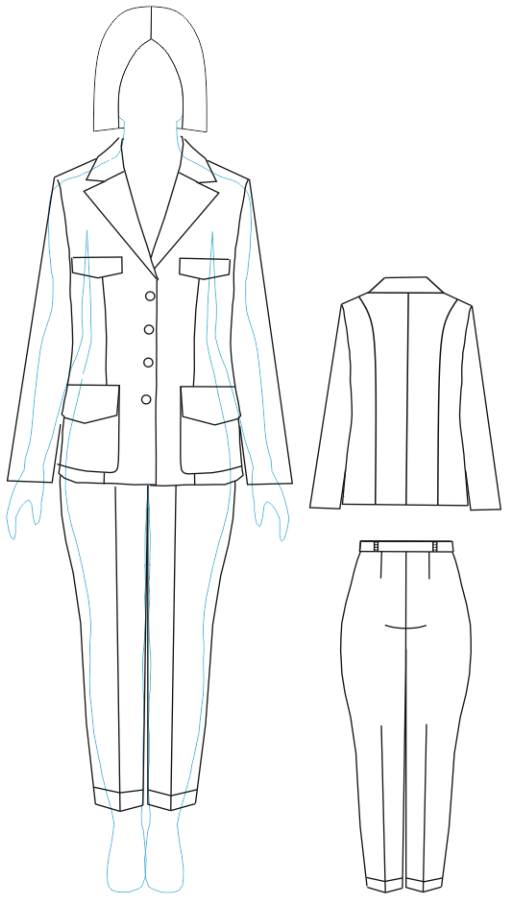
Figure 7 - Trend board

Table 1. Analysis of models – analogues

Sketch of the model - analogue	MA number	Appearance description
1	2	3
	MA #1	<p>Suit for women of the younger age group for everyday wear, made of one-colored wool blend fabric, consisting of a jacket and trousers.</p> <p>Jacket of a semi-adjacent silhouette, moderate volume, with a set-in cut of the sleeve and a central open side clasp on a fixed shackle with a welt loop and a button.</p> <p>The shoulder girdle is naturally sloping, slightly widened.</p> <p>Structurally, the voluminous shape was created due to side cuts, reliefs on the back, waist darts - undercuts on the front, the middle seam of the back, constructive additions and WTO.</p> <p>On the front there are waist tucks - undercuts. There are also side patch pockets on the front. The entrance to the pocket is horizontal. The bottom of the pockets is rounded. The bottom of the board is rounded.</p> <p>A back with the reliefs coming out of an armhole, with an average seam. Single-seam set-in sleeves, medium volume along the entire length. The bottom of the sleeves is smooth.</p> <p>Stand-up collar - turn-down jacket type.</p> <p>Jacket length 70 cm.</p> <p>The lining is stitched on the bottom of the product.</p> <p>Matching lining.</p> <p>From the waist line along the edge of the side, along the bottom of the product, along the side and</p>

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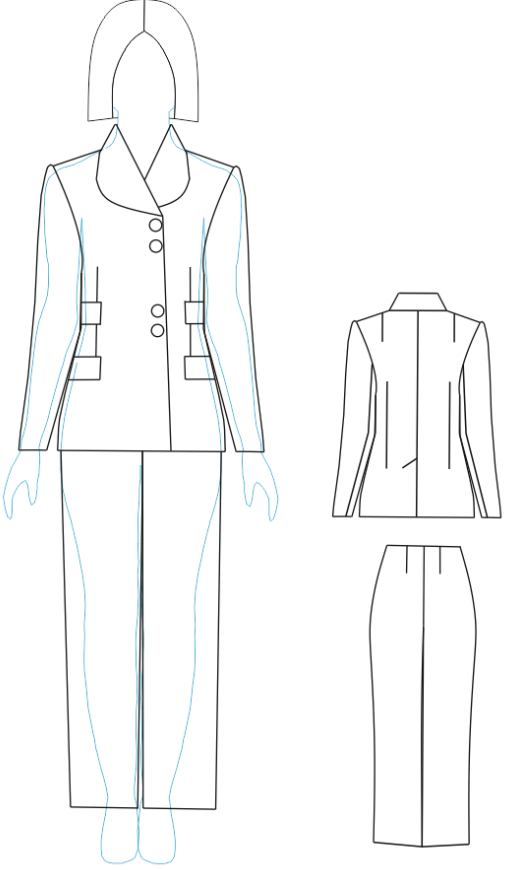
	<p>bottom cut of the pockets, as well as along the upper part of the armhole and along the edges of the stamete, there is a finishing line at a distance of 0.5 cm from the edge.</p> <p>Jacket with upper shoulder pads. Trousers are straight, wide, long, on an undercut belt, with a fastener on a secret band - a lightning in the left lateral seam.</p> <p>Waist line in a natural place.</p> <p>Parts of the front parts of the trousers with tucks, two on each side. Parts of back parts of trousers with waist darts.</p> <p>Recommended sizes and heights: R: 158,164,170; Og3: 84-92-96; About:92-96-100.</p>
	<p>MA #2</p> <p>Suit for young women for everyday wear in plain dyed denim, consisting of a jacket and trousers.</p> <p>Jacket of a semi-adjacent silhouette, large volume, with a set-in cut of the sleeve and a central open side fastener with 4 welt loops and 4 buttons.</p> <p>Structurally, the voluminous shape was created due to side cuts, reliefs on the back, waist darts - undercuts on the front, the middle seam of the back, constructive additions and WTO.</p> <p>and in front there are waist tucks - undercuts, side patch pockets - briefcases with curly-shaped flaps. The entrance to the pocket is horizontal. The bottom of the pockets is rounded. Also on the front are imitation chest pockets with flaps. Valves - figured form.</p> <p>Back with reliefs emerging from the shoulder seams, with a middle seam.</p> <p>Single-seam set-in sleeves, medium volume along the entire length. The bottom of the sleeves is smooth.</p> <p>Stand-up collar - turn-down jacket type. Sharp lapels.</p> <p>Jacket length 70 cm.</p> <p>The lining is stitched on the bottom of the product. Matching lining. Jacket with upper shoulder pads.</p> <p>Trousers are straight, slightly tapered to the bottom, shortened, on a stitched belt, the ends of which are fastened with a welt loop and a button.</p> <p>Fastener of trousers on a band - a lightning in front.</p> <p>Waist line in a natural place.</p> <p>Parts of the front details of the trousers with waist darts and ironed "arrows".</p> <p>Parts of back parts of trousers with waist darts.</p> <p>The belt has two loops on the front and back.</p> <p>The bottom of trousers is processed by stitched cuff.</p> <p>Recommended sizes and heights: R: 158,164,170; Og3: 84-92-96; About:92-96-100.</p>

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	<p>MA #3</p>	<p>Suit for women of the younger age group for everyday wear, made of one-colored wool blend fabric, consisting of a jacket and trousers.</p> <p>Jacket of a semi-adjacent silhouette, small volume, with a set-in cut of the sleeve and a central open side fastener with 4 welt loops and 4 buttons.</p> <p>Structurally, the voluminous shape was created due to side cuts, waist and shoulder darts on the back, waist darts - undercuts on the front, middle back seam, constructive additions and WTO.</p> <p>On the front there are waist tucks - undercuts to the pocket entry line, side welt pockets with flaps. 2 cm above the waist line there are decorative elements in the form of valves.</p> <p>Back with waist and shoulder darts, with a middle seam ending with a vent.</p> <p>Two-seam set-in sleeves, medium volume along the entire length. The bottom of the sleeves is smooth.</p> <p>Collar standing - turn-down type "shawl".</p> <p>Jacket length 75 cm.</p> <p>The lining is stitched on the bottom of the product.</p> <p>Matching lining.</p> <p>Jacket with upper shoulder pads.</p> <p>Trousers are direct, on an undercut belt, a fastener of trousers on a secret band - a lightning in the left lateral seam.</p> <p>Waist line in a natural place.</p> <p>Parts of the front details of the trousers with waist darts and side pockets.</p> <p>Parts of back parts of trousers with waist darts.</p> <p>Recommended sizes and heights: R: 158,164,170; Og3: 84-92-96; About:92-96-100.</p>
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Suit for young women for everyday wear in plain dyed denim, consisting of a jacket and trousers.

Trousers are straight, slightly tapered to the bottom, shortened, with a low waistline, on a stitched belt, the ends of which are fastened with a swept loop and a hidden button. Fastener of trousers on a braid lightning in front.

Parts of the front details of the trousers with waist darts.

Parts of the back parts of the trousers with waist darts, with a welt pocket with a leaflet. Finishing lines are laid along the edges of the leaves. The entrance to the pocket is horizontal.

The belt has two loops on the front and back.

Specification of patterns of the jacket model corrected:

Suit for young women for everyday wear in plain dyed denim, consisting of a jacket and trousers.

Jacket of a semi-adjacent silhouette, moderate volume, with a set-in cut of the sleeve and a shifted open side fastener for a pair of overcast loops and buttons.

The shoulder girdle is naturally sloping.

Structural-volumetric shape of the front is created due to side cuts, waist darts, constructive additions and WTO.

On the front there are waist tucks - undercuts, into which the breast tucks are transferred, also on the front there are side patch pockets. The entrance to the pocket is horizontal, located 6 cm below the waistline. The distance that the pocket extends beyond the waist tuck is 0.6 cm.

Back with shoulder and waist darts, with a middle seam ending with a vent. Slot height 15 cm.

Two-seam set-in sleeves (with elbow and front seams), long, medium volume along the entire length. The bottom of the sleeves is smooth.

Stand-up collar of jacket type.

The length of the jacket is 70 cm.

The lining is stitched on the bottom. Matching lining.

Product with upper shoulder pads. The thickness of the shoulder pads is 1.5 cm.

Specification of pattern patterns pants:

Suit for young women for everyday wear in plain dyed denim, consisting of a jacket and trousers.

Trousers are straight, slightly tapered to the bottom, shortened, with a low waistline, on a stitched

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belt, the ends of which are fastened with a swept loop and a hidden button. Fastener of trousers on a braid lightning in front.

Parts of the front details of the trousers with waist darts.

Parts of the back parts of the trousers with waist darts, with a welt pocket with a leaflet. Finishing lines are laid along the edges of the leaves. The entrance to the pocket is horizontal.

The belt has two loops on the front and back.

Finishing line is laid along the bottom of the trousers.

Developed in CAD "Grace"

Fullness = 1

Suit for young women for everyday wear in plain dyed denim, consisting of a jacket and trousers.

Jacket of a semi-adjacent silhouette, moderate volume, with a set-in cut of the sleeve and a shifted open side fastener for a pair of overcast loops and buttons.

The shoulder girdle is naturally sloping.

Structural-volumetric shape of the front is created due to side cuts, waist darts, constructive additions and WTO.

On the front there are waist tucks - undercuts, into which the breast tucks are transferred, also on the front there are side patch pockets. The entrance to the pocket is horizontal, located 6 cm below the waistline. The distance that the pocket extends beyond the waist tuck is 0.6 cm.

Back with shoulder and waist darts, with a middle seam ending with a vent. Slot height 15 cm.

Two-seam set-in sleeves (with elbow and front seams), long, medium volume along the entire length. The bottom of the sleeves is smooth.

Stand-up collar of jacket type.

The length of the jacket is 70 cm.

The lining is stitched on the bottom. Matching lining.

Product with upper shoulder pads. The thickness of the shoulder pads is 1.5 cm.

Developed in CAD "Grace" Figure 8.



Figure 8 - Appearance of the designed model of a women's suit

The calculations performed for the designed women's suit confirmed the economic efficiency of the research, allowed the authors to implement the validity of the chosen solution for the preparation of design and technological documentation and the cost of raw materials and materials, which allowed them to recommend them for implementation.

Features of the manufacture of a women's suit, taking into account the individual characteristics of the customer at small enterprises, formed on the basis of the TOP.

Questions about the quality of clothing today do not bypass anyone. As buyers, we have the following requirements for clothing: convenience, affordability, fashion and quality. As manufacturers, we anticipate,

create, offer and sell clothing. But, even despite the abundance of ready-made clothes in stores, buyers with a typical physique, as well as owners of a non-standard figure, increasingly prefer clothes made to order.

Every girl strives to look modern and stylish. Designers and fashion trends help them with this. In a mass market, it is not always possible to choose the preferred clothing that meets the requirements. As a rule, the human figure can be different and differ significantly from the norms of a typical body type, from this we can conclude that clothes made in mass production for a typical body type may not always have an ideal fit for a person's figure. That is why many girls resort to individual tailoring, where they can provide services for making clothes according to

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individual parameters, taking into account the wishes of the customer.

The main tasks of the work are: the manufacture of the designed product and the development of design documentation for it.

To fulfill the main task, the product must comply with the direction of fashion, as well as a number of requirements: to the selected materials, to reliability, aesthetic, ergonomic and technical. In addition, it is necessary to determine economic indicators in the form of an allowable consumption of material for individual production.

In the course of the work, the following types of design activities were carried out: the study of the direction of fashion and the development of the assortment, the development of a sketch of the designed model, the selection of initial information for the manufacture of the product, the form of dimensional features and increments, the selection of a rational package of materials, the development of specifications for patterns of cut details of the designed model, the construction model design, determination of the rationing and cost of manufacturing products, description of the characteristics of the methods for shaping the spatial shape of the product, choice of HTO modes, equipment processing methods, development of a scheme for the assembly sequence of the product before and after fitting. Also, the cost of technical documentation will be calculated and the effectiveness of organizational and technical measures will be calculated for the further possibility of introducing a model of a women's suit into production.

Name and scope

- type of product - suit;
- product group - female;
- product subgroup - demi-season;
- purpose of the product - for everyday wear;
- age group - younger
- body type - 170-96-104
- climatic zone - IV.

Aesthetic requirements

The aesthetic requirements for clothing are in accordance with its modern spiritual needs of a person and society, expressed in the ideals of beauty, the prevailing style direction and fashion. The aesthetic properties of clothing are directly affected by its geometric shape and material properties. The geometric shape of clothing has a significant emotional impact on a person and is perceived by him as the volume, mass of the product, its silhouette. It can give the impression of massiveness or lightness, slimness of the figure. Along with the form, the properties of materials have a strong emotional impact on a person. Using materials of various coloristic design and properties (rigidity, drapeability, plasticity, etc.), it is possible to create products of high aesthetic

value. Clothing should be in harmony with the environment,

Ergonomic properties

Ergonomic requirements for clothing are associated with the physiological, anthropometric and other characteristics of a person. Clothing should be comfortable and create a feeling of comfort, it should not tire and cause a decrease in performance.

Ergonomic requirements for clothing are divided into hygienic, anthropometric, psychophysiological. Anthropometric requirements are to ensure compliance with the exchange characteristics of the human body in statics and dynamics, which makes it possible to create favorable conditions for breathing and movement of a person, ease of use and comfort. Hygienic requirements Ensuring a comfortable feeling of underwear space, good health and protection of a person from external factors.

The suit should provide comfort when wearing the product for more than three hours, since the jacket on the lining should provide comfortable parameters of the microclimate under the clothes, therefore, the materials should have the following properties: air permeability, low electrification, low dust capacity, high degree of cleanability, low wetting.

The main characteristics of properties: heat-shielding, hygroscopicity, sorption capacity, air permeability, dust permeability, dust capacity, electrification, dirt capacity. Psychophysical requirements are such requirements as compliance with aesthetics, a good and competent choice of clothing that will fit well on the human body, clothing that meets anthropometric and hygienic requirements, satisfies physiological needs

Based on all the requirements for the materials and the product, it is possible to single out the best version of the appearance of a women's suit.

The straight silhouette of the jacket is the most successful choice to visually reduce it, since the customer's figure is quite voluminous, both in the area of the breasts and hips. The recommended volume is medium, for a sufficiently comfortable feeling when worn according to the personal wishes of the customer. The length of the jacket is average, 10 cm below the hip, the most optimal, which will not create a visual illusion of short legs. The client's shoulders do not have any defects in appearance, so it was decided to opt for the traditional set-in cut of the sleeve.

Trousers of medium volume and tapered to the bottom, emphasizing the advantages of the customer's voluminous hips, the length of the trousers 7/8 is the most successful, since the height is not lower than average, which will allow you to visually not weigh down the bottom of the whole image.

Technical requirements

- the proposed constructive basis (silhouette):

Jacket - straight silhouette, medium volume, sleeve cut - set-in;

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Pants - tapered to the bottom, 7/8 long, medium volume;

- Requirements for raw materials and basic materials:

The designed product is intended for everyday wear. Therefore, the color scheme of the material is chosen in soothing classic colors. The projected model is of a classic type, has strict lines, as well as the developed model of a straight silhouette, so the material must be selected with an average stiffness value.

Particular attention should be paid to the shrinkage of the main and lining materials, which can occur during the manufacture of the product. After heat treatments, the quality of products deteriorates (the shape and design of garments are distorted), in addition, the consumption of materials increases, as a result of which allowances are increased. In this regard, low-shrink or non-shrink materials are recommended for this product.

Important in importance are ergonomic quality indicators and reliability indicators. The developed model is designed for everyday wear, so the material must have a certain density, which in turn affects the heat-shielding properties.

From the foregoing, we can conclude that for the manufacture of a women's suit, as the main material, it is recommended to choose a suit fabric with the addition of artificial fibers.

Requirements for lining materials:

The requirements for lining materials are divided into: aesthetic, design and technological, operational and hygienic. For the designed model, the preferred colors of the main fabric are achromatic, since the lining material in the designed model does not have any decorative function, its color scheme will be close to the main material. The lining must have a certain wear resistance, therefore, have a smooth surface with a small value of thread expansion in the seams. It is desirable that the fibrous composition of the lining correspond or be close in properties to the fibrous composition of the base material in order to avoid shrinkage of materials.

The lining of the suit is closest to the clothes in order to avoid sticking it to other products, it should

have a low electrified. The color of the lining material must be resistant to WTO and washing.

Artificial silk was chosen for the lining material, since this fabric has a fairly smooth surface and low cost.

Requirements for lining materials:

The gasket is selected according to the type and surface density of the base material. The gasket must ensure the preservation of the shape of the product during operation. Should be wrinkle-resistant and not weigh down clothing. Have good shaping ability and a certain rigidity.

The materials must be resistant to repeated bending loads, must be well wetted and have sufficient hygroscopicity.

Doublerin with dot adhesive coating was chosen as a gasket material.

Requirements for fastening materials:

Sewing threads must be strong, wear-resistant. They must correspond in terms of extensibility to the type of material, correspond in terms of shrinkage to the material. Threads should not have defects in appearance. The threads must be light-resistant and heat-resistant, their coloring must be resistant to washing, friction and light.

- name of the material - costume fabric;

- fibrous composition - polyester 75%, elastan 25%;

- name of the material artificial silk;

- fibrous composition cotton, polyester;

- name of materials polyester 85%, viscose 15%.

Technical Proposal

Women's suit, which is already a season, does not lose its leading position. The spring-summer 2022 season was no exception.

This season there may be various design solutions for the shoulder girdle. Balmain introduced saddle-shoulder jackets. The shoulder girdle can be in a natural place and have clear lines, in addition, the lines of the shoulder girdle can be expanded, raised or lowered.

Fashionable jackets from Balmain, Christian Siriano and Chanel are selected based on the study of specialized sites and are presented in figures 9 and 10.

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Figure 9 - Fashionable jackets from Balmain



Figure 10 - Fashionable jackets from Christian Siriano and Chanel

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Loose cut jackets, close to men's style, still remain in trend. Proof of this are fashionable jackets from Jason Wu, Acne Studios and Louis Vuitton that look like they are just a couple of sizes too big.

Fashion jackets from Acne Studios and Louis Vuitton are shown in Figure 11.



Figure 11- Fashionable jackets from Acne Studios and Louis Vuitton

The most win-win choice is a classic style jacket that can be worn with absolutely any trousers, skirts and shorts - all options, according to the designers of Fendi, Max Mara and Maryling, will be relevant.

Fashionable jackets from Max Mara, Maryling, Simona Marziali and MRZ, Fendi are shown in Figure 12.

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Figure 12 - Classic jackets from Max Mara, Maryling, Simona Marziali and MRZ, Fendi

Stylish jackets up to the middle of the thigh and even lower were presented by the Balmain and Sportmax brands. Fitted models look great in trouser ensembles, and a free-cut women's blazer can be

combined without trousers and a skirt - such a jacket looks like a mini-length dress.

Fashionable jackets from Balmain and Sportmax are shown in Figure 13.

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Figure 13 - Fashionable jackets from Balmain and Sportmax

It is natural that in a pair with elongated jackets in the collections there are also short ones. Similar models were presented by the brands Saint Laurent, Stella McCartney and Chanel.

Fashionable jackets from Stella McCartney, Saint Laurent and Chanel are shown in Figure 14.

Impact Factor:

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Figure 14 - Fashionable jackets from Stella McCartney, Saint Laurent and Chanel



Figure 15 - Fashion trousers from Zimmermann and Emporio Armani

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The fastener in this season is relevant, as a rule, on the buttonholes, it can be either offset by two pairs of loops and buttons, or central by two or one loop and a button.

Buttons are mostly in the tone of the product or a few tones darker, occasionally there are metal ones.

Since in this work we are considering a suit, a jacket can be worn in combination with trousers.

Straight-cut trousers are a long-established classic that will always look win-win in the wardrobe of any girl; such trousers were presented by fashion designers Zimmermann and Emporio Armani.

Fashion trousers from Zimmermann and Emporio Armani are shown in Figure 15.

One of the most persistent trends that the current fashion dictates to us are high-waisted trousers that are able to visually lengthen the legs or adjust them, such models were presented to us by Max Mara and Alberta Ferretti.

Fashion trousers from Max Mara and Alberta Ferretti, as well as from Giorgio Armani and Maryling are presented in figures 16 and 17.



Figure 16 - Fashion trousers from Max Mara and Alberta Ferretti

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OAJI (USA) = **0.350**

Cropped trousers allow you to demonstrate graceful ankles, such an opportunity is given to us by Giorgio Armani and Maryling.



Figure 17 - Fashion trousers from Giorgio Armani and Maryling

Banana trousers are another win-win option, they can successfully hide the true volumes in the hips due to folds and tucks, such trousers were presented by Emporio Armani and Alberta Ferretti.

Fashion trousers from Emporio Armani and Alberta Ferretti are shown in Figure 18.

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Figure 18 - Fashion trousers from Emporio Armani and Alberta Ferretti

Despite the fact that spring dictates bright colorful colors, designers offer us a calm, delicate palette of colors. Leading white, gray, beige, black, light blue, dusty pink and pale lilac.

Fashionable jackets from LaPointe Pre-Fall and Madam Figaro, as well as Jonathan Simkhai and Hugo Boss are presented in figures 19 - 20.

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Figure 19 - Fashionable jackets from LaPointe Pre-Fall and Madam Figaro



Figure 20 - Fashionable jackets from Jonathan Simkhai and Hugo Boss

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GIF (Australia)	= 0.564	ESJI (KZ)	= 8.771	IBI (India)	= 4.260
JIF	= 1.500	SJIF (Morocco)	= 7.184	OAJI (USA)	= 0.350

Based on information about the promising fashion direction and having studied consumer demand, it can be predicted that women's suits do not give up their positions and remain at the peak of popularity, as they are one of the most indispensable things in every girl's wardrobe, for any event. Therefore, we can safely say that the development of a women's suit, consisting of trousers and a jacket, is expedient.

During the analysis of current fashion trends, a moodboard was compiled. It is necessary to demonstrate the future design project, its concept, mood, shades. The concept of a mood board reflects

integrity, each visual element should be subordinated to one mood. The task of the trend board is to present the design project with images. For inspiration, the material was taken from the site "Pinterest", which contains a huge variety of different images on various topics. The mood board was designed based on the most memorable and relevant looks of the spring-summer 2022 season. It depicts a composition, thought out to the smallest detail images, pantone trendy colors and accessories.

The mood board for the spring-summer 2022 fashion direction is shown in Figure 19.

Весенний mood

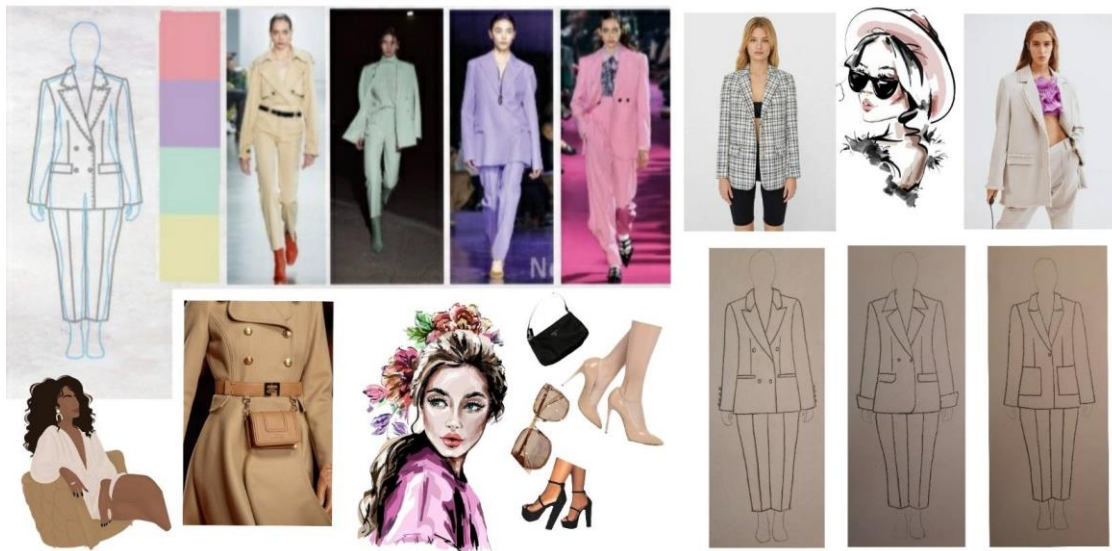


Figure 19 - Moodboard of the spring-summer 2022 fashion direction

Preliminary design

The design and engineering section was carried out in the conditions of operation of CAD "Grace" (version 401), as this significantly reduces the time spent at the stage of development of design documentation, by automating the processes of

building the design of the product and derived parts, developing specifications, graces and time sheets.

Description of the appearance of the model

A screenshot of the "Description of Appearance" window of CAD "Grace" (version 401) is shown in Figure 20.

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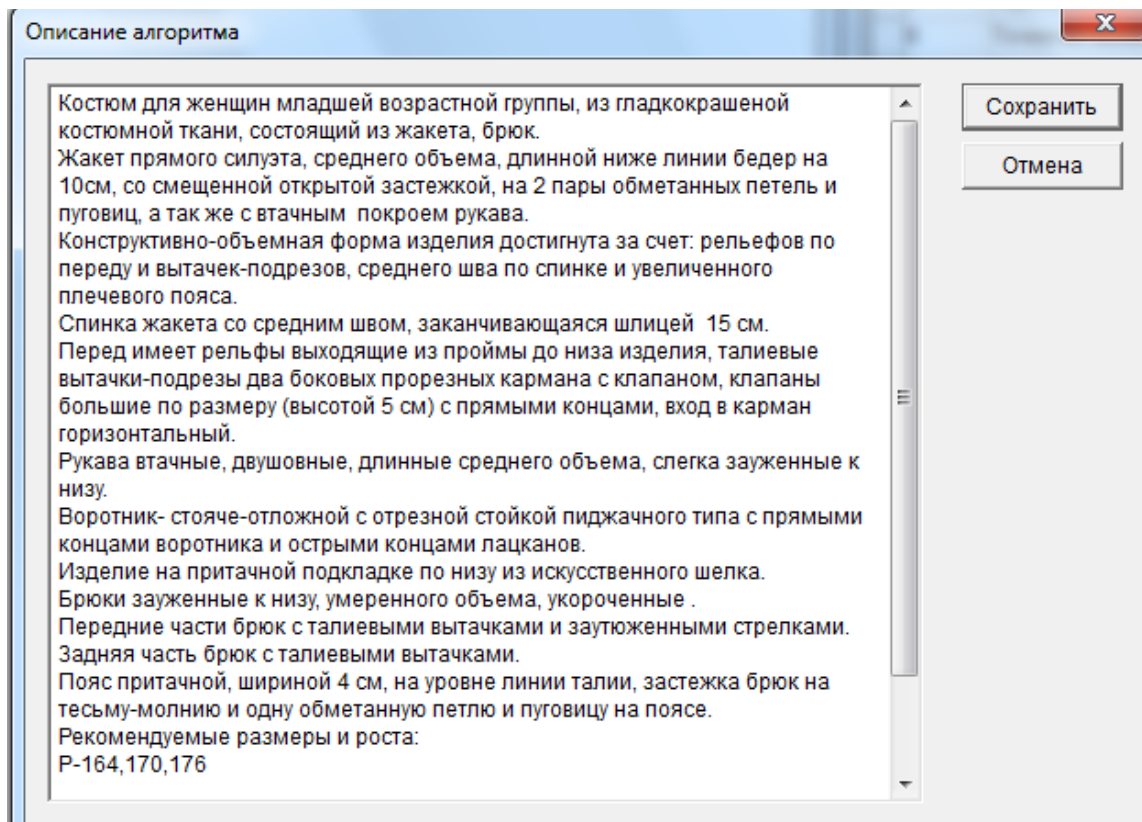


Figure 20 - Screenshot of the window "Description of appearance" in CAD "Grace" (version 401)

Selection and analysis of models - analogues of the designed product

To develop a sketch of the designed model, it is necessary to select an analogous model.

The purpose of the selection and analysis of models - analogues is to obtain the initial data to create the most relevant and rational design based on all the positive qualities of the proposed product models.

Comparative analysis allows you to identify the shortcomings of previous analogues and subsequently prevent their appearance in a new product.

The analysis of the form of analogue models involves the study of the structure of models according to the sketches of the reference series and the description of each analogue model, where the structural device of each proposed model is characterized in detail.

For the correct selection of analogue models, the products must meet the following requirements:

- the same assortment group;
- the same purpose;
- relevance

Based on the results of the analysis of the promising fashion trend in a number of existing high-quality clothing models, analogue models were selected that are necessary for the further creation of a standard sample of a women's suit.

The main criteria for choosing analogue models are: compliance with fashion trends, purpose, assortment group, convenience and comfort.

Analogue models are shown in Figures 21 - 27 A sketch of the designed model, developed using the Coral Draw graphic editor (version 2018) is shown in Figure 21.

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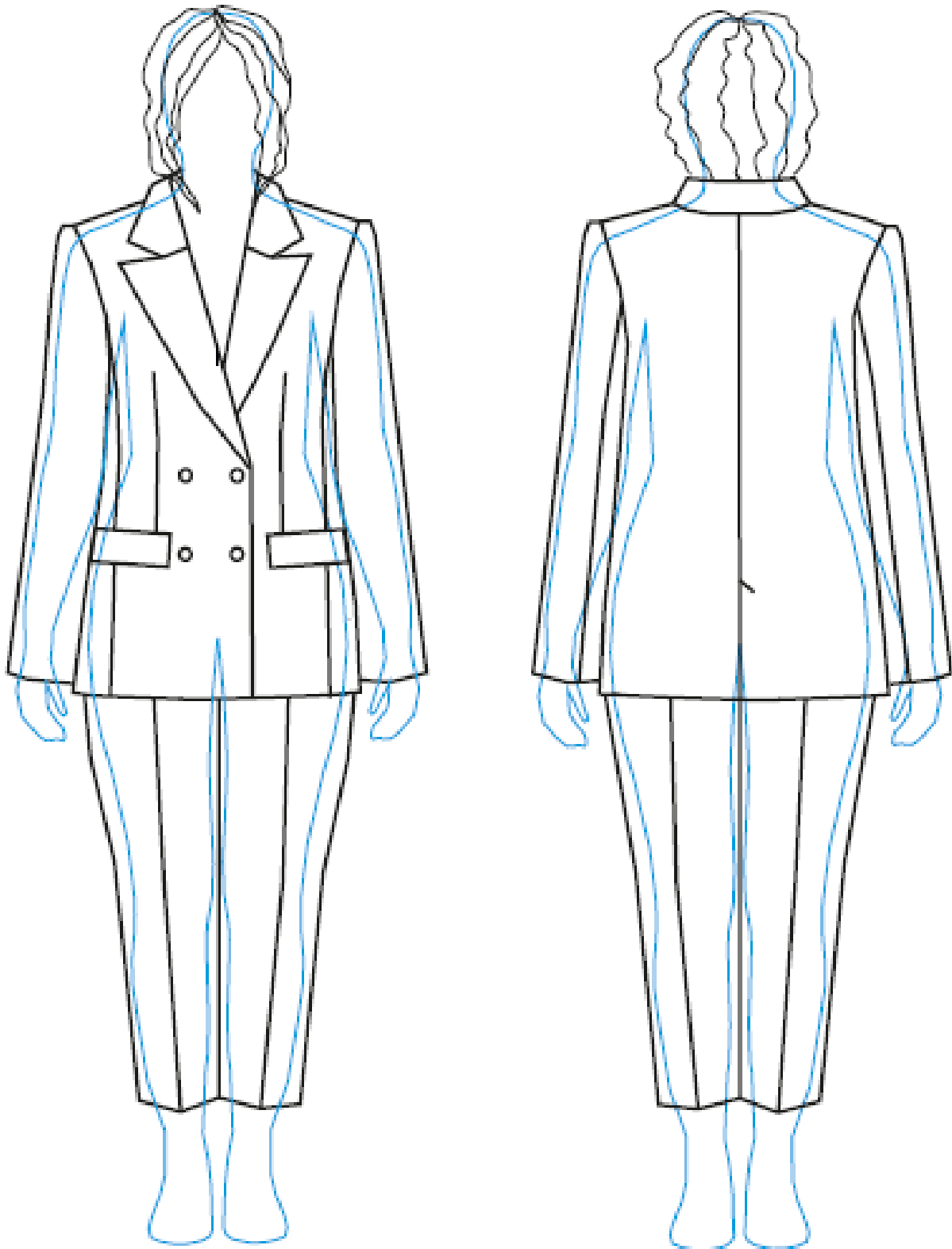


Figure 21 - Sketch of a women's costume

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JIF	= 1.500	SJIF (Morocco)	= 7.184	OAJI (USA)	= 0.350

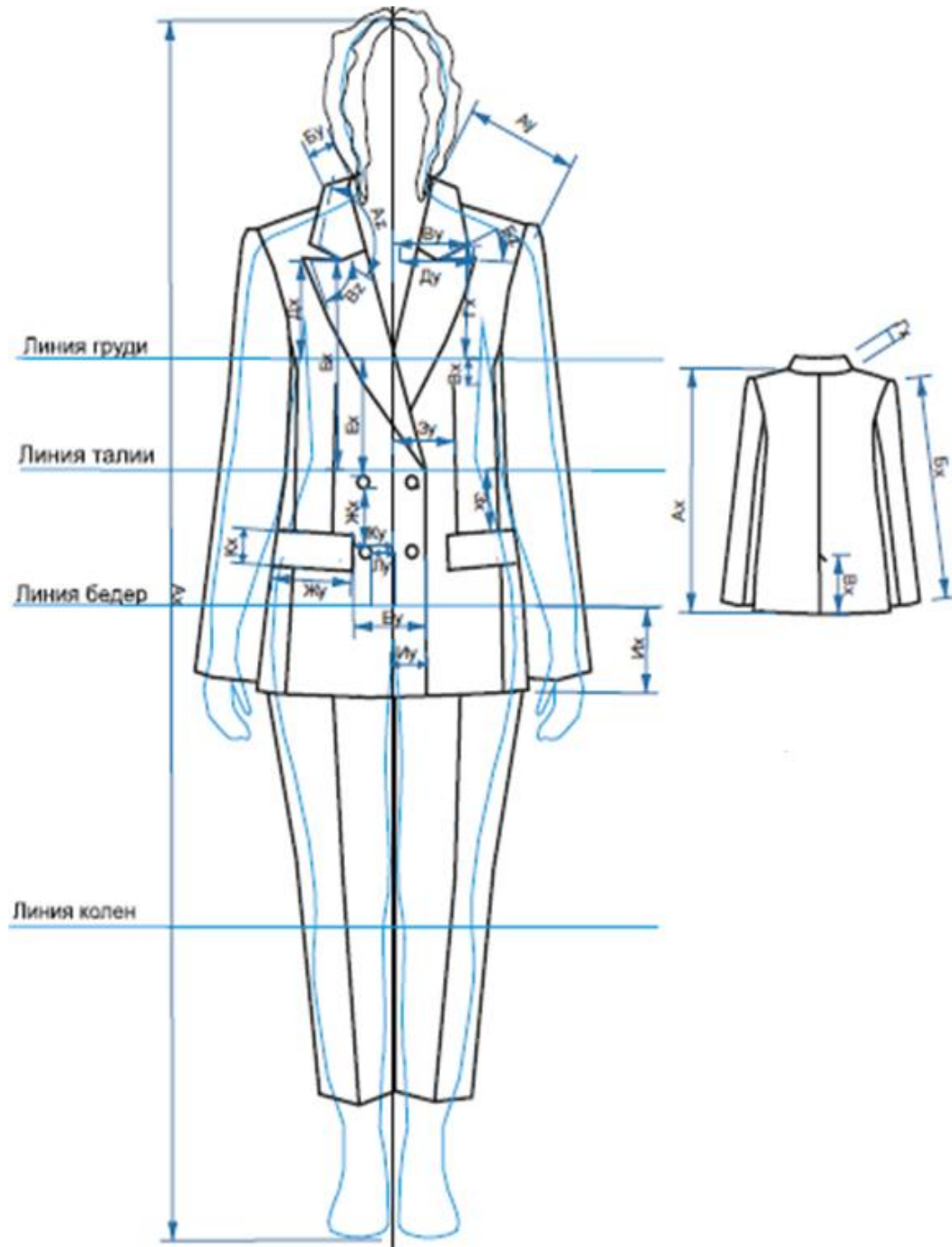


Figure 22–Analysis and study of the designed jacket model

An image of the analysis of the designed model of trousers is shown in Figure 23.

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 PIF (India) = 1.940
 IBI (India) = 4.260
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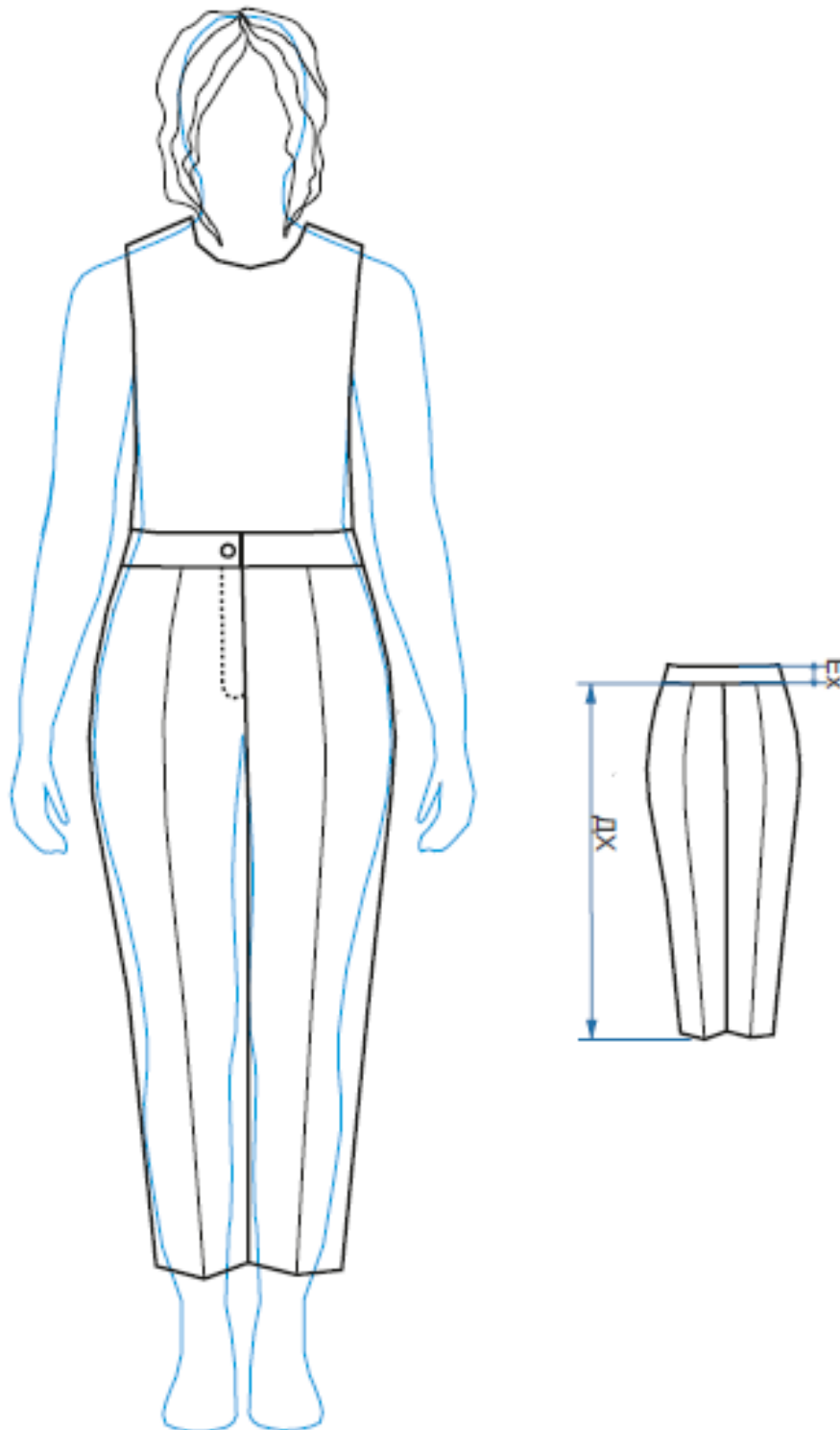


Figure 23 - Analysis of the designed model of trousers

Table 2. Design characteristic of the jacket and trousers

Women's jacket			
Before			
Horizontally			
Distance from half-skid line to side pocket	Ku	0.8	6.7

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Distance from buttons to half-slip line	Lou	0.5	3.0
Angular Options			
Collar End Angle	Az	109.6	109.6
Angle between collar and lapel	Bz	29.9	29.9
Lapel End Angle	Bz	70.4	70.4
Back			
Vertically			
Length of the product	Oh	4.7	67.7
The length of the sleeve	bh	4.3	62
Spline length	Vx	1.1	15.8
Back collar height	Gx	0.6	4.3
Pants			
Vertically			
Length trousers	Dx	5.9	93.0
belt width	Ex	0.3	4.0

Based on table 2, a drawing of a general view of the jacket was drawn up and presented in accordance with figure 24.

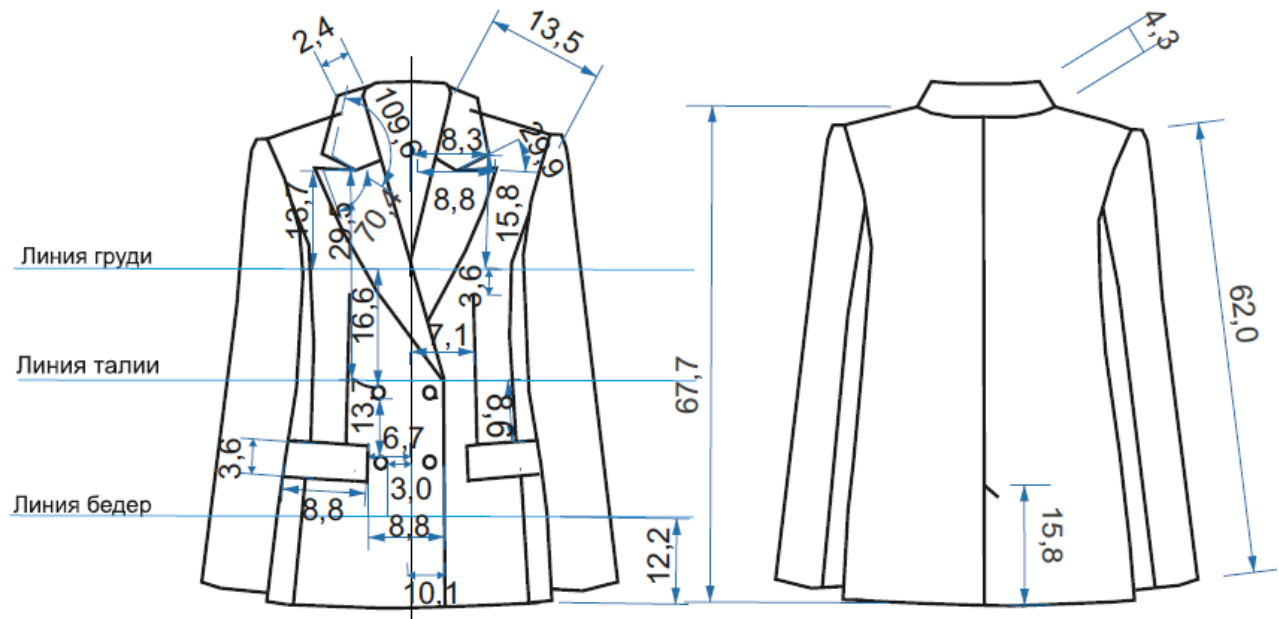


Figure 24 - General view drawing of the designed jacket model

Based on the table, a drawing of a general view of the trousers was drawn up and presented in accordance with Figure 25.

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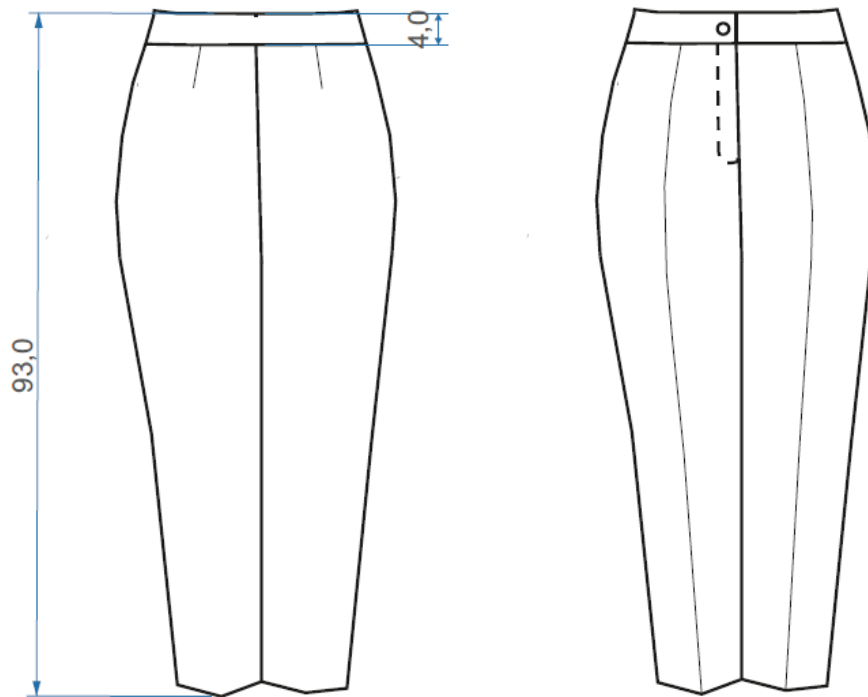


Figure 25 - General view drawing of the designed model

Selection of initial data for model design

Since one of the objectives of the research is to develop a sample of a women's suit, to build the design of the product, we will use the Unified Method for Designing Clothing developed by the Central Experimental and Technical Sewing Laboratory (TSOTSHL) of the Ministry of Life of Russia. Its advantages lie in the simplicity of calculations using ready-made formulas and the availability of a fitting that allows you to achieve the best fit and adjustment of the product.

To reduce the time spent, it was decided to use CAD "Grace", which allows to develop the design of the product, patterns of parts, specifications, etc. as quickly as possible.

It is also possible to quickly make changes to the design in the form of allowances for a free fit or dimensional features.

This method was developed taking into account the specifics of the work of enterprises that manufacture clothes according to individual orders of the population, which means that it is ideal for designing clothes of a given assortment.

The calculation-graphic method for constructing drawings of clothing details provides for the dimensional characteristics of a human figure and an allowance for a free fit as initial data.

Breeding parameters, i.e. the choice of typical values of the leading dimensional features of the base figure, as well as for subsequent gradation in the Grace CAD system for a women's suit, is shown in Figure 28 using a jacket as an example.

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Figure 28 - Screenshot of the "Reproduction Parameters" window for developing an algorithm for constructing a suit design in CAD "Grace" (version 401) (on the example of a jacket)

Since the costume products were built according to two algorithms (separate jacket and trousers), the dimensional characteristics for the jacket and trousers are presented in the form of screenshots of the

"Dimensional characteristics" windows in the "Grace" CAD system in Figures 29 - 30.

N	Пояснение	Обозначение	Формула	Значение
1	Рост	P	170.	170.
2	Полуобхват шеи	Cш	18.6	18.6
3	Полуобхват груди первый	Cr1	46.1	46.1
4	Полуобхват груди второй	Cr2	50.4	50.4
5	Полуобхват груди третий	Cr3	48.	48.
6	Полуобхват талии	Cr	37.4	37.4
7	Полуобхват бедер	Cб	52.	52.
8	Ширина груди	Шг	17.5	17.5
9	Длина талии спинки 2	Дтс2	44.1	44.1
10	Длина талии переда 2	Дтп2	45.4	45.4
11	Высота груди	Вг	27.	27.
12	Высота проймы сзади 2	Впрс2	22.	22.
13	Высота плеча косая	Впк2	44.1	44.1
14	Ширина спины	Шс	18.3	18.3
15	Ширина плечевого ската	Шп	13.5	13.5
16	Обхват плеча	Оп	30.1	30.1
17	Обхват запястья	Озап	16.6	16.6
18	Глубина талии первая	Гт1	5.4	5.4
19	Глубина талии вторая	Гт2	5.5	5.5

Figure 29 - Screenshot of the "Dimensional Features" window for developing an algorithm for constructing a jacket design in CAD "Grace" (version 401)

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N	Пояснение	Обозначение	Формула	Значение
20	Расстояние от линии талии до пола сбоку	Дсб	110,4	110,4
21	Расстояние от линии талии до колена	Дтк	61	61.
22	Расстояние от линии талии до плоскости сидения	Дс	28,7	28,7
23	Выступ ягодиц относительно линии талии	Вяг	5,5	5,5
24	Высота бока относительно линии талии	Вбт	4,8	4,8
25	Высота бока относительно талии	Вжт	1,2	1,2
26	Обхват бедра	Обед	59,0	59.
27	Прибавка к обхвату бедер	Пб	3	3.
28	Прибавка к полуобхвату талии	Пт	1	1.
29	Прибавка к обхвату бедра	Пбед	5	5.
30	Длина изделия	Дбр	113+(P-170)/1,5	113.
31	Уровень линии бедер	Тб	20,5	20,5
32	Ширина брюк внизу в готовом виде	Шн	17	17.
33	Ширина брюк в готовом виде на уровне колена	Шк	20	20.
34	Обхват колена	Ок	38	38.
35	Длина изделия	Ди	100+(P-170)/3	100.
36				

Figure 30 - Screenshot of the "Dimensional Features" window for developing an algorithm for constructing the design of trousers in CAD "Grace" (version 401)

Screenshots of the "Formula" windows of CAD "Grace" and the design drawing of a jacket with a set-sleeve are shown in Figures 31 and 32.

N	Пояснение	Обозначение	Формула	Значение
20	Прибавка на свободное облегание по линии груди	Пг	12	12.
21	Прибавка на свободное облегание по линии талии	Пт	13	13.
22	Прибавка на свободное облегание по линии	Пб	6	6.
23	Прибавка на свободное облегание по спинке	Пшс	2,5	2,5
24	Прибавка на свободное облегание по переду	Пшп	1,8	1,8
25	Прибавка к длине спинки по линии талии	Пдтс	1	1.
26	Прибавка на свободу проймы по глубине	Пспр	3	3.
27	Прибавка к ширине горловины	Пшг	0,5	0,5
28	Прибавка на уработку и толщину материала	Ур	1	1.
29	Прибавка к длине талии по переду	Пдтп	Пдтс+Ур	2.
30	Толщина плечевой накладки	Пн	0,5	0,5
31	Раствор плечевой выточки	Реп	2	2.
32	Прибавка к высоте плеча косой	Плк	Пдтс+Пн+0,5	2.
33	Длина плечевой выточки	Деп	9	9.
34	Ширина сетки	A0a1	Cr3+Пг	60.
35	Ширина спинки	A0a	Шс+Пшс	20,8
36	Ширина переда	a1a2	Шп+(Cr2-Cr1)+Пшп	23,6
37	Ширина проймы	aa2	A0a1-a1a2-A0a	15,6
38	Уровень лопаток	A0У	0,4*Дтс2	17,64
39	Уровень глубины проймы	A0Г	Впрз2+Пспр+0,5*Пдтс	25,5
40	Уровень линии талии	A0Т	Дтс2+Пдтс	45,1
41	Уровень линии бедер	Тб	0,5*Дтс2-2	20,05
42	Ширина горловины спинки	A0'A2	Сш/3+1,2+Пшг	8,9
43	Глубина горловины спинки	A2A1	A0'A2/3	2,966667
44	Длина изделия	Ди	76+(P-170)/3	76.
45	Плечевая линия	A2П1	Шп+Реп	15,5
46	Плечевая линия	ТП1	Впк2+Плк	46,1
47	Вершина горловины переда	T8A3	Дтп2+Пдтп	47,4
48	Ширина горловины переда	A31A4	Сш/3+Пшг	6,7
49	Положение конца нагрудной выточки	A4Г7	Вр2+0,5*Пдтп	28.
50	Раствор нагрудной выточки	A4A9	2*(Cr2-Cr1)	8,6
51	Спуск линии талии по переда	T3T8	1	1.
52	Скос рукава	Скос	2	2.
53	Прибавка к обхвату запястья	Пзап	10	10.
54	Диаметр пуговицы	дп	2	2.

Figure 31 - Screenshot of the "Formulas" window of CAD "Grace" (version 401) (on the example of a jacket)

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N	Пояснение	Обозначение	Формула	Значение
20	Расстояние от линии талии до пола сбоку	Дсб	110,4	110,4
21	Расстояние от линии талии до колена	Дк	61	61.
22	Расстояние от линии талии до плоскости сидения	Дс	28,7	28,7
23	Выступ ягодиц относительно линии талии	Ваг	5,5	5,5
24	Высота бока относительно линии талии	Вбт	4,8	4,8
25	Высота бока относительно талии	Вжт	1,2	1,2
26	Обхват бедра	Обед	59,0	59.
27	Прибавка к обхвату бедер	Пб	3	3.
28	Прибавка к полубоковому талии	Пт	1	1.
29	Прибавка к обхвату бедра	Пбед	5	5.
30	Длина изделия	Дбр	113-(P-170)/1,5	113.
31	Уровень линии бедер	Тб	20,5	20,5
32	Ширина брюк внизу в готовом виде	Шн	17	17.
33	Ширина брюк в готовом виде на уровне колена	Шк	20	20.
34	Обхват колена	Ок	38	38.

Figure 32 - Screenshot of the "Formulas" window of CAD "Grace" (version 401) (using trousers as an example)

Model design development

Having selected the initial data, we proceed to the calculation and construction of a drawing of the basic basis of the product design, which is subsequently converted into a drawing of a model design. Since the construction of the structure is carried out in CAD Grazia, all calculations and images of the structures are presented as screenshots of the screen.

The model features of the jacket are: a waist tuck-undercut on the details of the front, an offset fastener, a shoulder tuck in the neck and armhole lines

(for lengthening the cuts), a slot in the middle seam of the back, the shape and size of the collar and lapels, the shape, size and location of the side pocket with a valve, the location and number of pairs of loops and buttons (offset fastening), the width of the side, the shape of the edge of the side at the bottom line and a double-seam sleeve.

Model features of trousers - stitched belt and length.

To transform the silhouette base into a model base, the following were used: the first and third types of constructive clothing modeling.

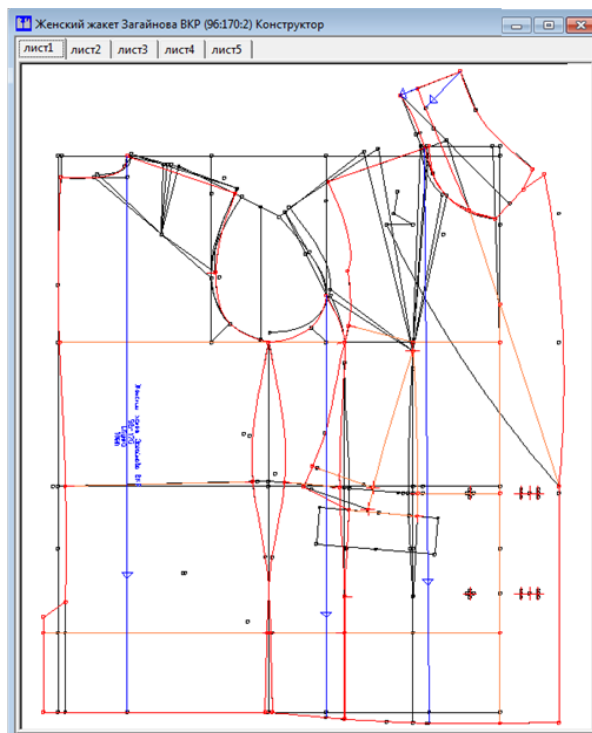


Figure 33- Screenshot of the window "Designer" CAD "Grace" (version 401) jacket design

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GIF (Australia)	= 0.564	ESJI (KZ)	= 8.771	IBI (India)	= 4.260
JIF	= 1.500	SJIF (Morocco)	= 7.184	OAJI (USA)	= 0.350

Drawings of the model design were developed in the conditions of operation in CAD "Grace" (version 401). Screenshots of windows, drawings of the model

design of the jacket and trousers, developed in the "Design and Modeling" subsystem are shown in Figures 33, 34 and 35.

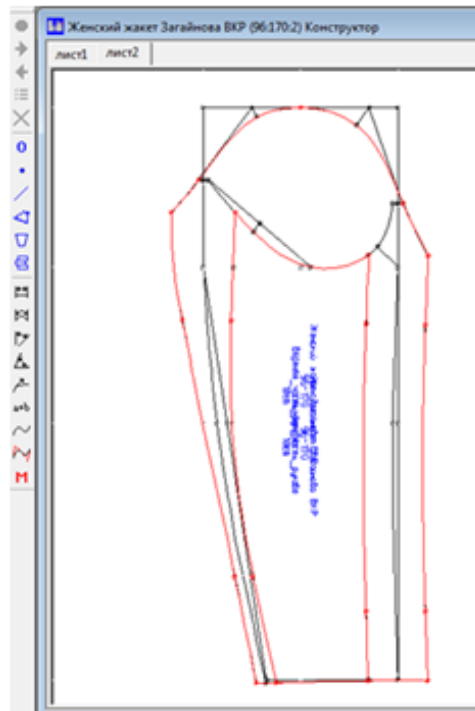


Figure 34 Screenshot of the window "Designer" CAD "Grace" (version 401) design of the set-in sleeve

Checking the design of the model in the layout

At this stage of work, it is necessary to clarify the shape of the product, both in general and in its individual sections, the position, shape and size of structural and decorative elements.

The purpose of the fitting is to work out the fit of the model on the figure, clarify the shape of the product and place decorative elements on it.

The sequence of the layout fitting:

1. In the product prepared for fitting, allowances for fitting should be indicated, the lines of the chest, waist, hips, half-slip, fold of the lapels should be outlined. We level the product put on the human figure along the bottom of the product and fix it with pins along the half-skid line, straighten it in width and slightly pull it down to eliminate a loose fit in the supporting part;

2. We refine the balance of the product. With the correct fit of the products on the figure, the longitudinal base lines, including the side seams, the middle cut of the back and front, should be located vertically, and the main structural belts (lines of the chest, waist, hips and bottom of the product) should be horizontal;

4. We refine the silhouette of the product, checking the degree of fit along the waistline, the degree of expansion of the product along the bottom line, the solutions of tucks and suture angles;

5. We check the length of the product, the horizontality of the bottom line, the location of the tucks, embossed seams, the position of the loops, we grind the neckline and armholes.

The layout of the projected model of a sample of a women's suit was made by sweeping and sweeping the side and shoulder sections of the prepared parts. The lower collar was sewn into the neck and one (right) sleeve using a shoulder pad. The main constructive lines (lines of the chest, waist, hips), as well as the inflection lines of the lapels and half-skid are applied.

During the first fitting, the general shape of the product and its parameters were specified. The silhouette of the product was refined by comparing the appearance and dimensions of the layout with the general view drawing 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, the position of the ledge and fold of the lapels, as well as the shape and position of the edge of the bead.

Specified the length of the slots.

During the fitting, defects on the jacket were revealed: little freedom of action in the bottom of the armhole; excessive width of the shoulder cut, namely 0.5 cm; unaesthetic lapel configuration and location of the bottom buttons.

To eliminate defects, it is necessary to deepen the armhole by 1.5 cm, reduce the shoulder cut by 0.5

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cm, make a smoother line of the edge of the bead, in the lapel area, move the location of the lower buttons by raising them by 2.5 cm.

At this stage of the research, detailed work was carried out with the individual features of the

customer's figure, which made it possible to eliminate defects in the fit of the product on the customer's figure.

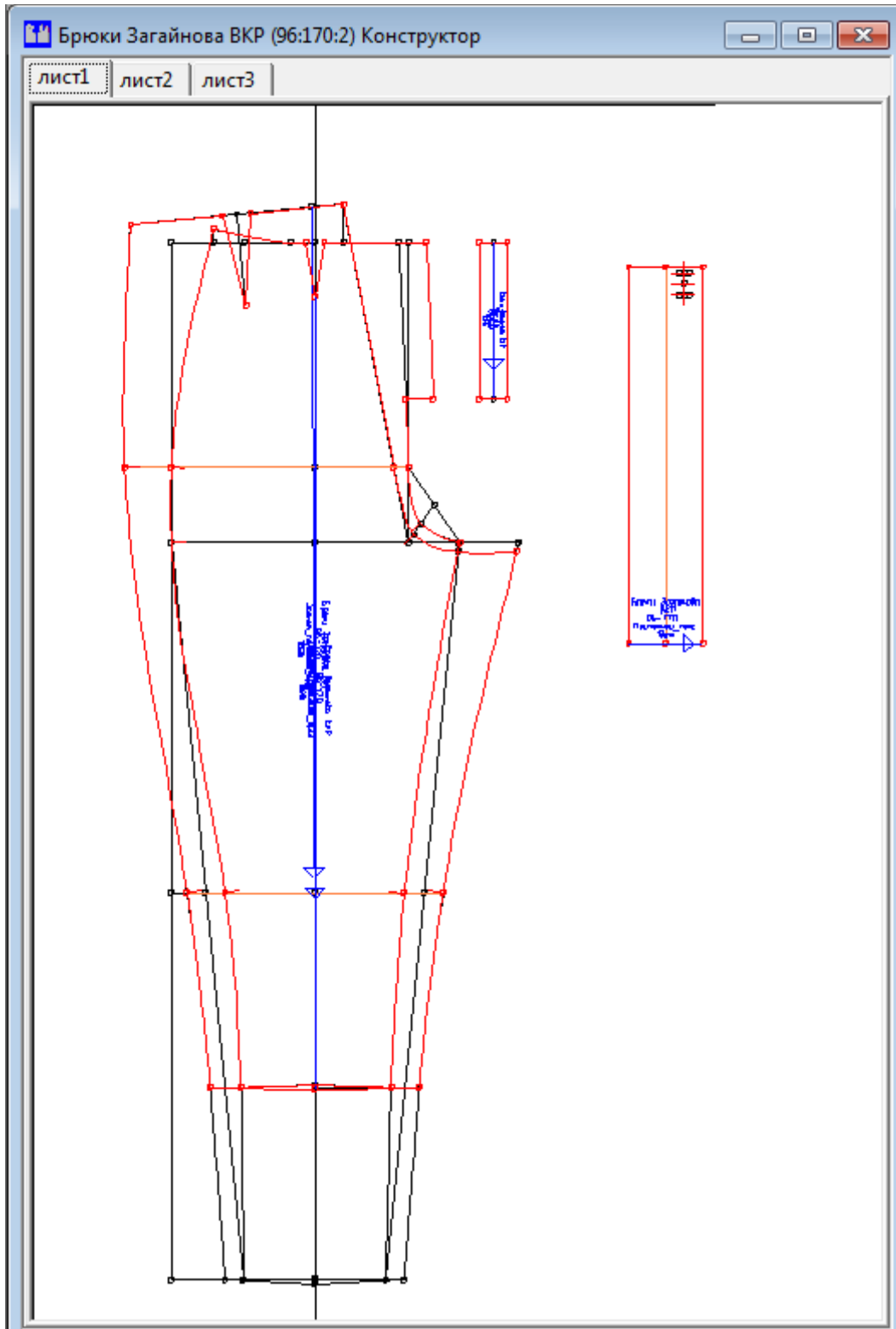


Figure 35 - Screenshot of the "Designer" window CAD "Grace" (version 401) design of women's trousers

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Development of a time sheet for the designed model

To check the quality of the finished product, various methods and methods of control are used. One of the methods of control of garments is measuring,

implying a comparison of the dimensions of the finished product with a time sheet.

The table of measures is developed in the conditions of CAD "Grace" (version 401).

The table of measures for a jacket and trousers (using a jacket as an example) is shown in Figure 36.

N	Пояснение	Обозначение	Формула	Значение	Прим.
1	Длина изделия	Ди	Ди	76.	
2	Длина талии спинки 2	Дтс2	Дтс2	44.1	
3	Длина талии переда 2	Дтп2	Дтп2	45.4	
4	Ширина спинки	Шс	Шс	18.3	
5	Ширина плечевого ската	Шп	Шп	13.5	
6	Ширина горловины переда	A31A4	A31A4	6.7	
7	Ширина спинки	A0a	A0a	20.8	
8	Ширина переда	a1a2	a1a2	23.6	
9	Уровень линии талии	A0T	A0T	45.1	

Figure 36 - Screenshot of the "Time sheet" window in CAD "Grace" (version 401) (using a jacket as an example), (fragment)

Development, design and production of patterns- originals of the main parts of clothing

Patterns of basic structures (in the manufacture of a model for a specific consumer) are developed without allowances for seams, bending of the product and allowances to clarify the product on the figure. These allowances are given when cutting directly on the fabric.

In traditional (manual) design, for the convenience of adjusting the design, taking into account the peculiarities of the physique of a

particular figure, the measurement sites of the main (corrected) sections are indicated on the patterns.

Since the design documentation was developed under the conditions of the operation of the CAD system "Grace" (version 401), the correction areas on the templates - patterns are not shown, and if it is necessary to rebuild the product design for a specific figure, the algorithm is recalculated according to the customer's individual dimensional characteristics.

The development of templates for patterns of jacket and trousers details from the base material in the conditions of CAD "Grace" (version 401) is shown in Figures 37 and 38.

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ISRA (India)	= 6.317	SIS (USA)	= 0.912	ICV (Poland)	= 6.630
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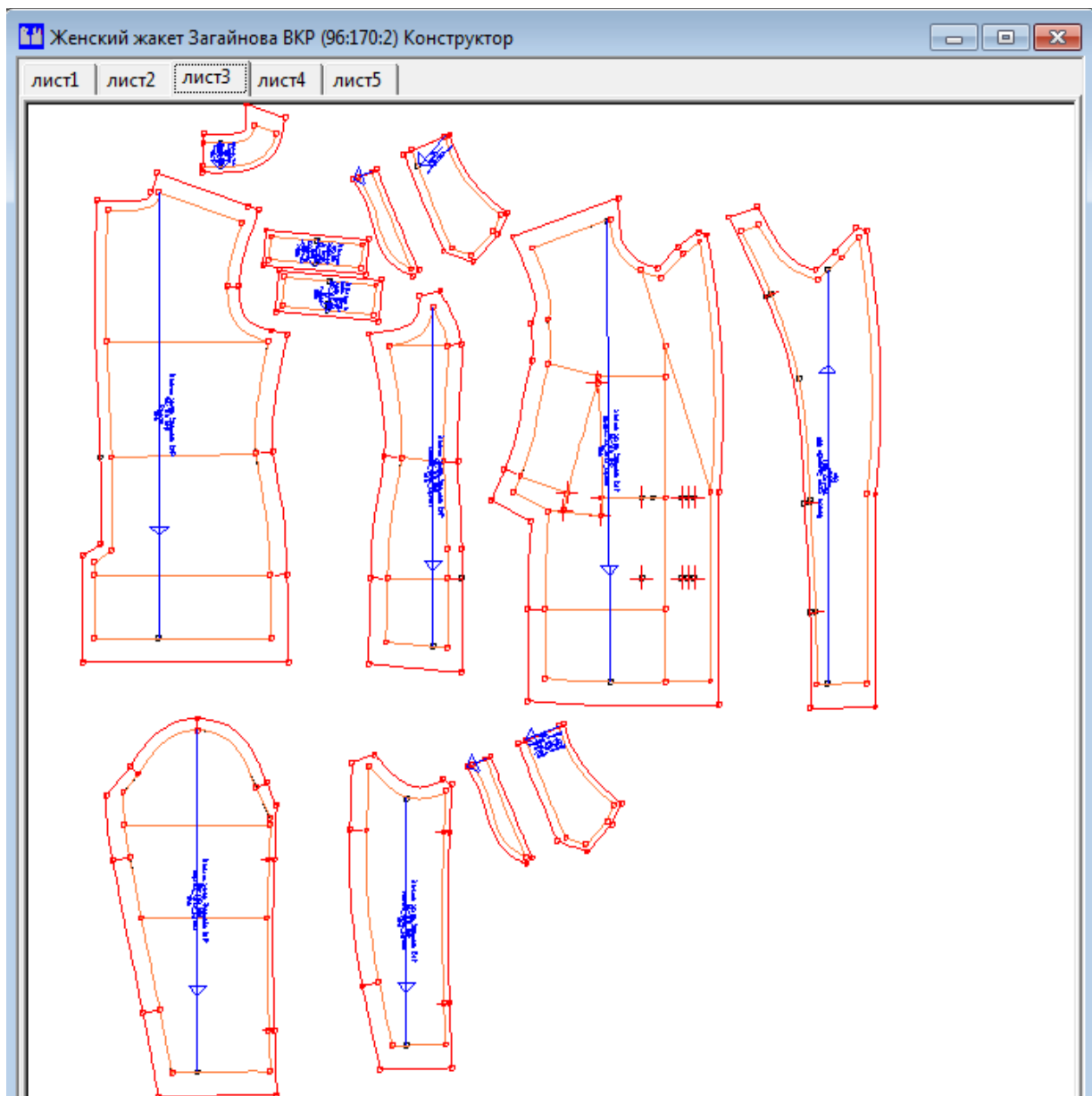


Figure 37 - Development of templates for patterns of jacket details from the base material in the conditions of CAD "Grace" (version 401)

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GIF (Australia)	= 0.564	ESJI (KZ)	= 8.771	IBI (India)	= 4.260
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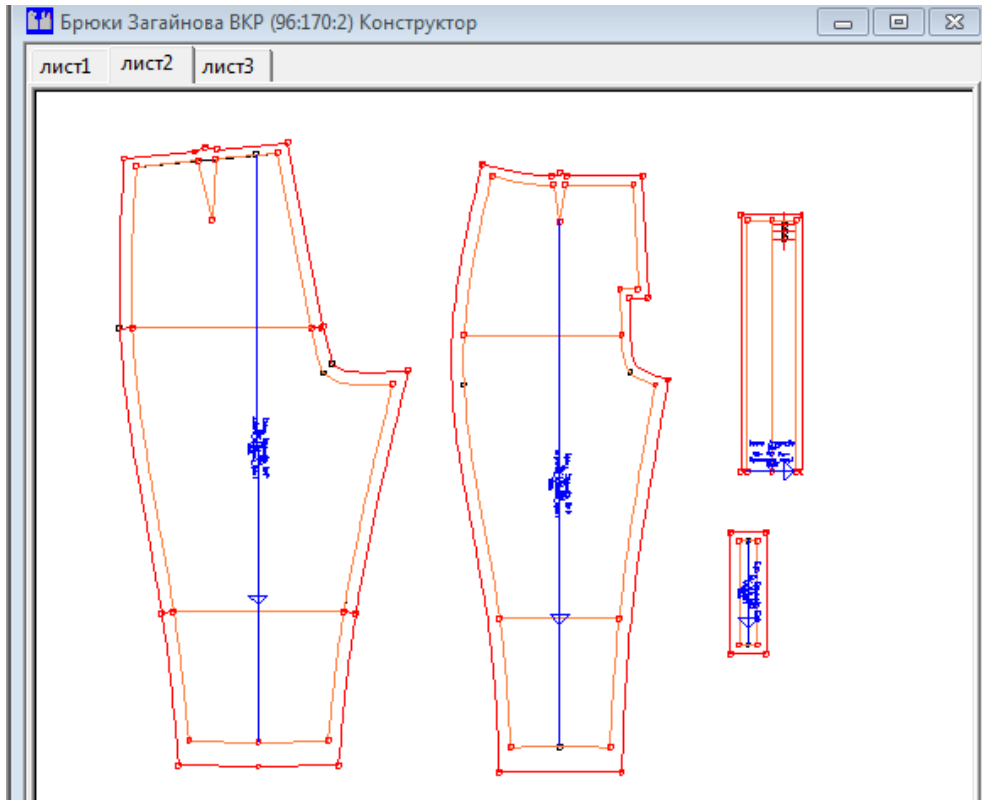


Figure 38 - Development of templates for patterns of trousers from the base material in the conditions of CAD "Grace" (version 401)

The development of templates for patterns of derived parts from lining material in the conditions of CAD "Grace" (version 401) is shown in Figure 39.

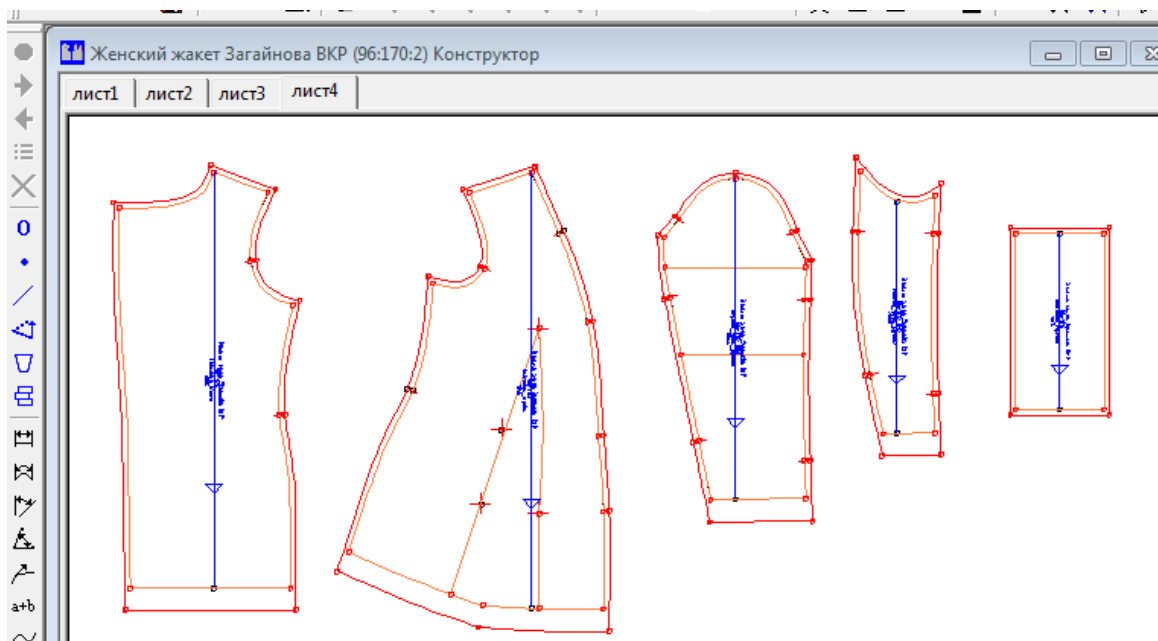


Figure 39 - Development of templates for patterns of derivative parts of a jacket from lining material in the conditions of CAD "Grace" (version 401)

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The development of templates for patterns of derived parts from gasket material in the conditions of

CAD "Grace" (version 401) is shown in Figures 40 and 42.

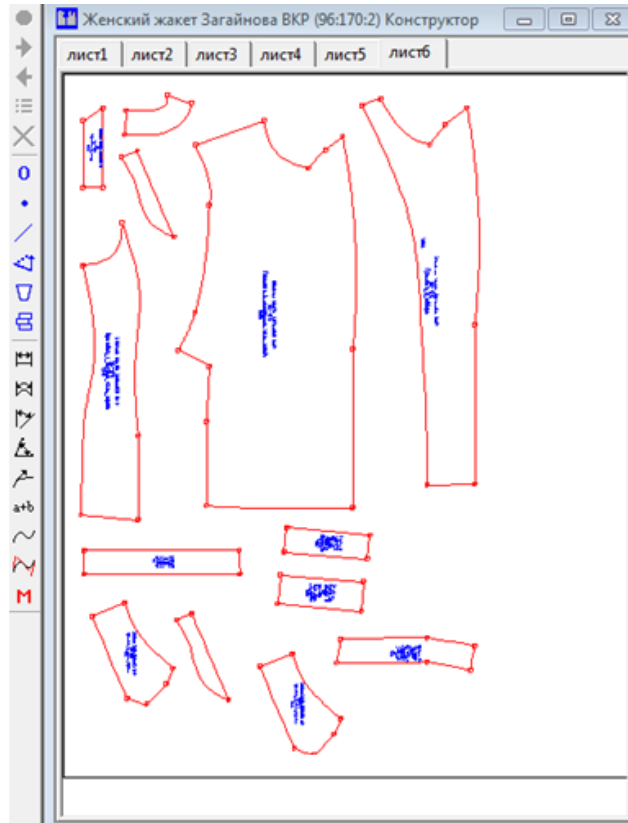


Figure 40 - Development of templates for patterns of derivative parts of a jacket from cushioning material in the conditions of CAD "Grace" (version 401)

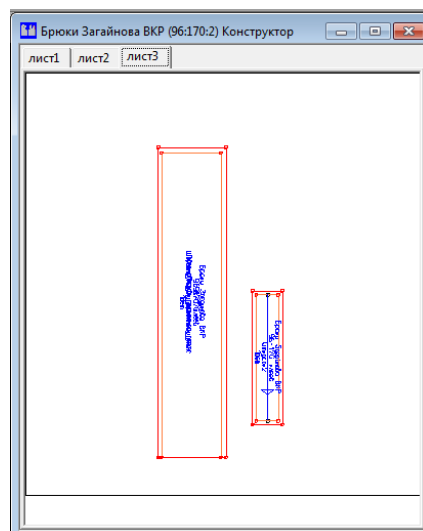


Figure 41 - Development of templates for patterns of derived parts of trousers from cushioning material in the conditions of CAD "Grace" (version 401)

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

The gradation of patterns in terms of size and height in traditional (manual) design can be carried out in three ways: grouping, beam or proportional calculation. The third method is most often used, since

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it does not take as much time as the grouping method, the main disadvantage of this method is the presence of an error, since grading is carried out using ready-made schemes calculated in advance.

In the final qualifying work, the gradation of patterns is shown as an example of working out the efficiency of the algorithm and automated recalculation and rebuilding of the entire set of design

documentation for any size - growth is carried out automatically using CAD "Grace" (version 401).

Figure 42 shows a screenshot of the selection of parameters for automated recalculation of pattern templates by size (on the example of a pattern template for a back part) from the base material.

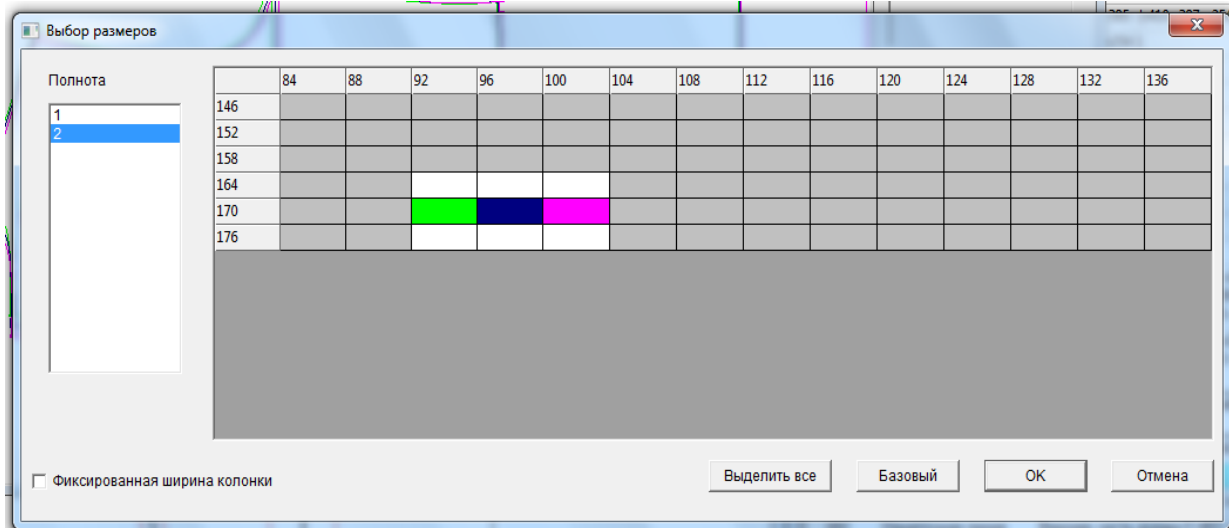


Figure 42 - Screenshot of the "Size Selection" window of CAD "Grace" (version 401), for automated recalculation of the size of the jacket pattern template (on the example of the part - the back) from the base material

The gradation according to the size of the template for the template of the women's jacket (on

the example of the back detail) from the base material is shown in Figure 43.

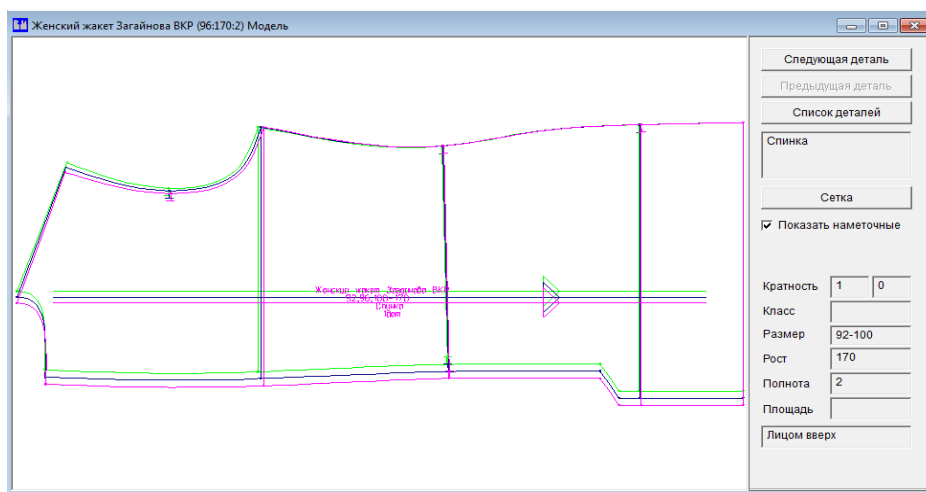


Figure 43 - Gradation according to the size of the pattern template of the jacket (on the example of the back part) from the base material

The screenshot of the "Size Selection" window of the "Grace" CAD system (version 401) shows the building for gradation according to the height of the

jacket pattern template (using the back part as an example) from the base material and is shown in Figure 44.

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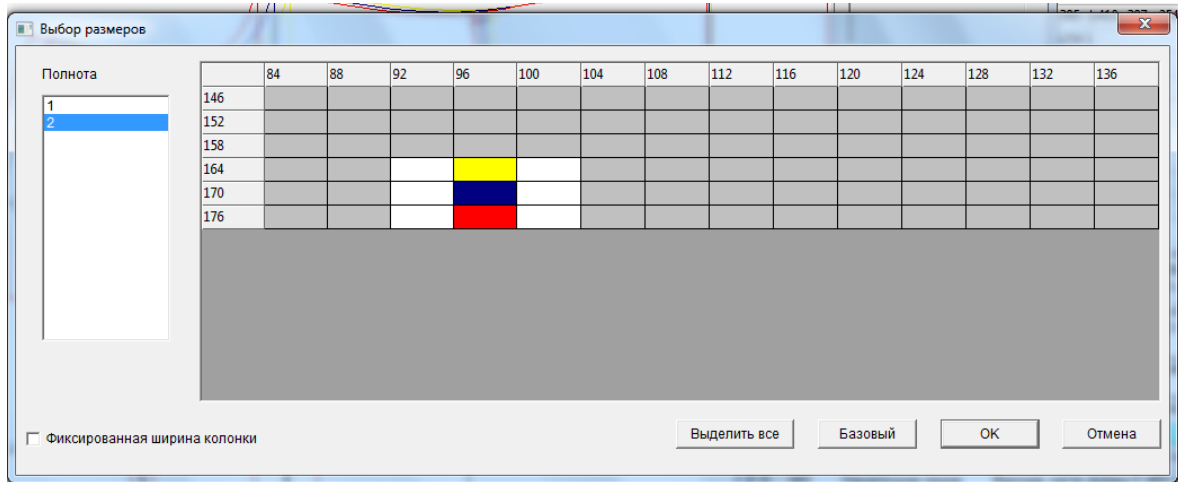


Figure 44 - Screenshot of the "Size Selection" window of CAD "Grace" (version 401), task for gradation according to the growth of the jacket pattern template (on the example of the back) from the base material

The gradation according to the size of the template for the pattern of a women's jacket (on the

example of a back detail) from the base material is shown in Figure 45.

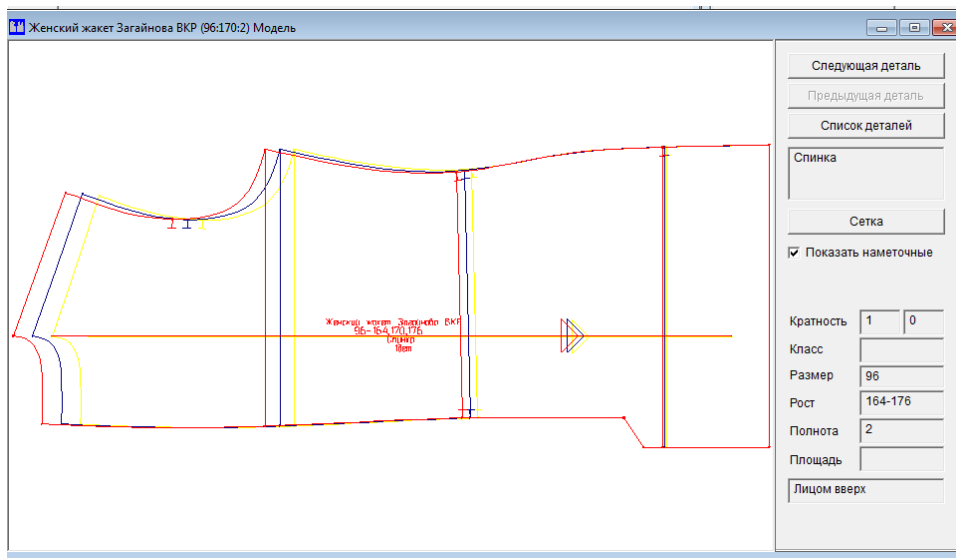


Figure 45 - Gradation according to the growth of the template of the jacket template (on the example of the back part) from the base material

In this section, a number of works have been done, namely: an analysis of the promising direction of fashion and the development of the assortment, which made it possible to single out the most relevant and striking models of women's suits, in the form of analogue models, has been carried out. Based on the selected models, a sketch of the projected model of a women's suit was developed. Using the sketch, a study and detailed analysis of the designed model was carried out, the overall dimensions of the model features of the suit are given in tabular form, on the basis of which a general view drawing of both the jacket and trousers was drawn up. The development of Product Assembly Sequence Diagram

arrays of information about the dimensional characteristics of the customer's figure and allowances for free fit was carried out, which later made it possible to develop a drawing of the base and model structures. To correct and ensure the best fit of the product, the product was checked in the layout. Based on all of the above, a rational package of materials for the manufacture of the product was selected. With the help of CAD "Grace" (version 401), it was possible to develop a specification for the details of the cut of products, which made it possible to gradate templates for patterns of parts by size and height.

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JIF = 1.500	SJIF (Morocco) = 7.184	OAJI (USA) = 0.350

The assembly diagram of the trousers is shown in Figure 46.

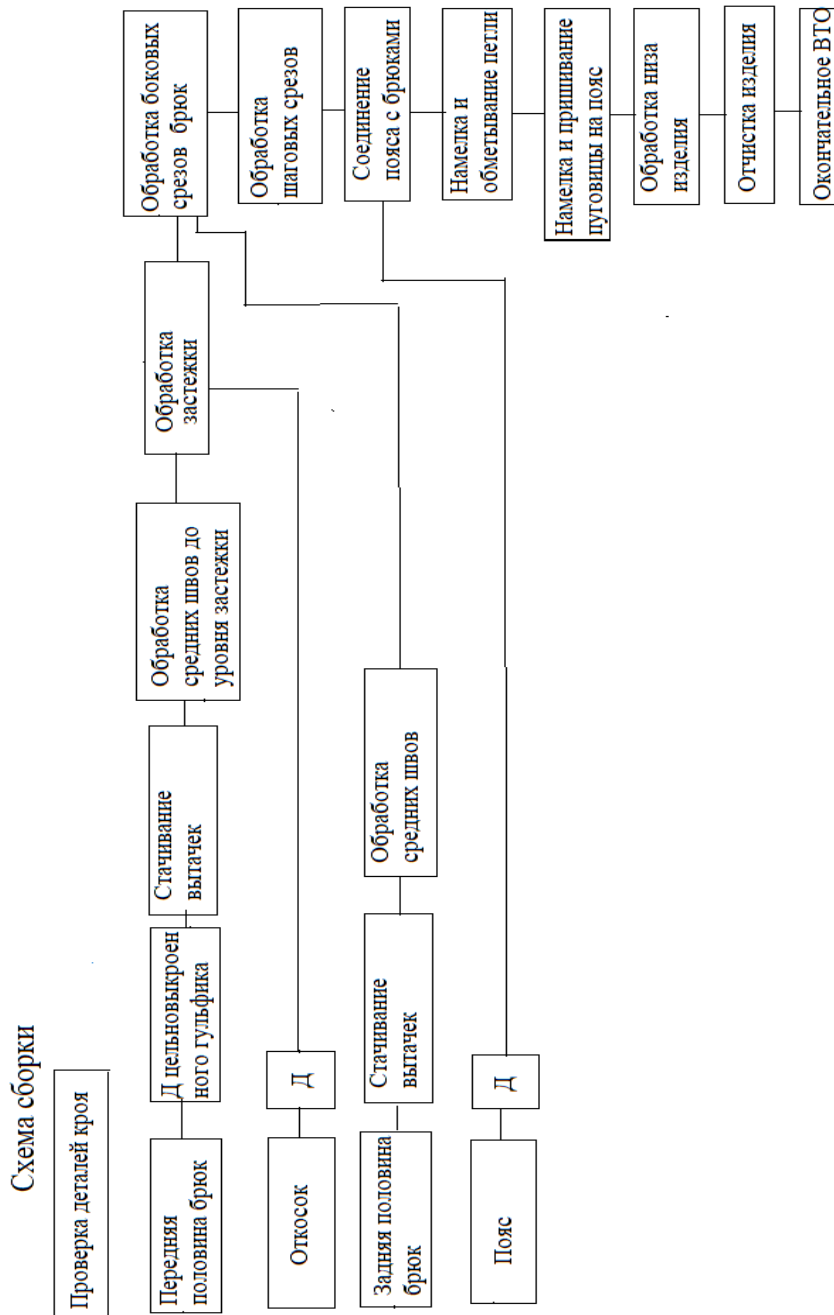


Figure 46 - Pants assembly diagram.

The assembly scheme of the jacket before fitting is shown in Figure 47

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Схема сборки до примерки

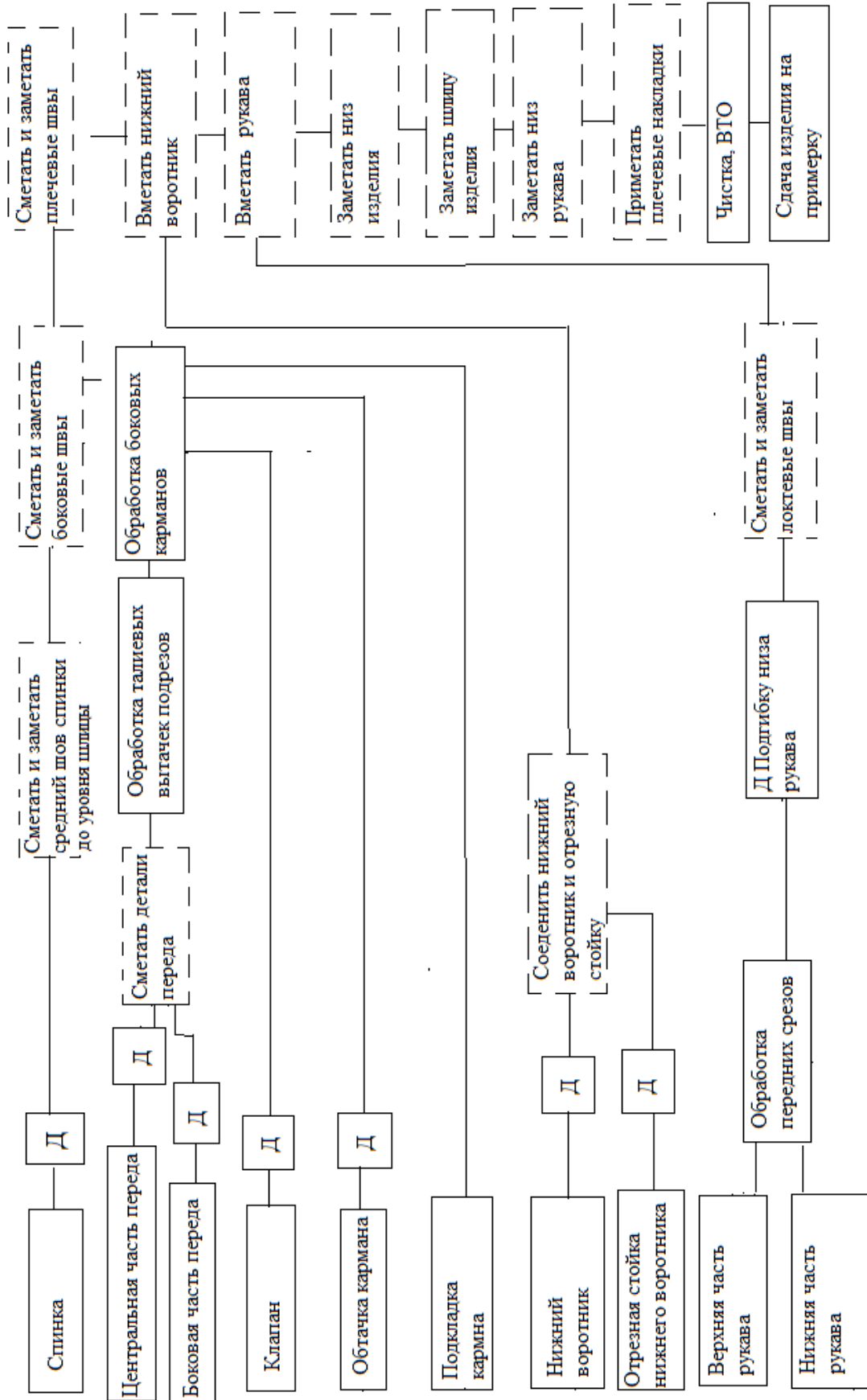


Figure 47 - Scheme of the assembly of the jacket before trying on

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Figure 48 shows the assembly diagram of the jacket after fitting.

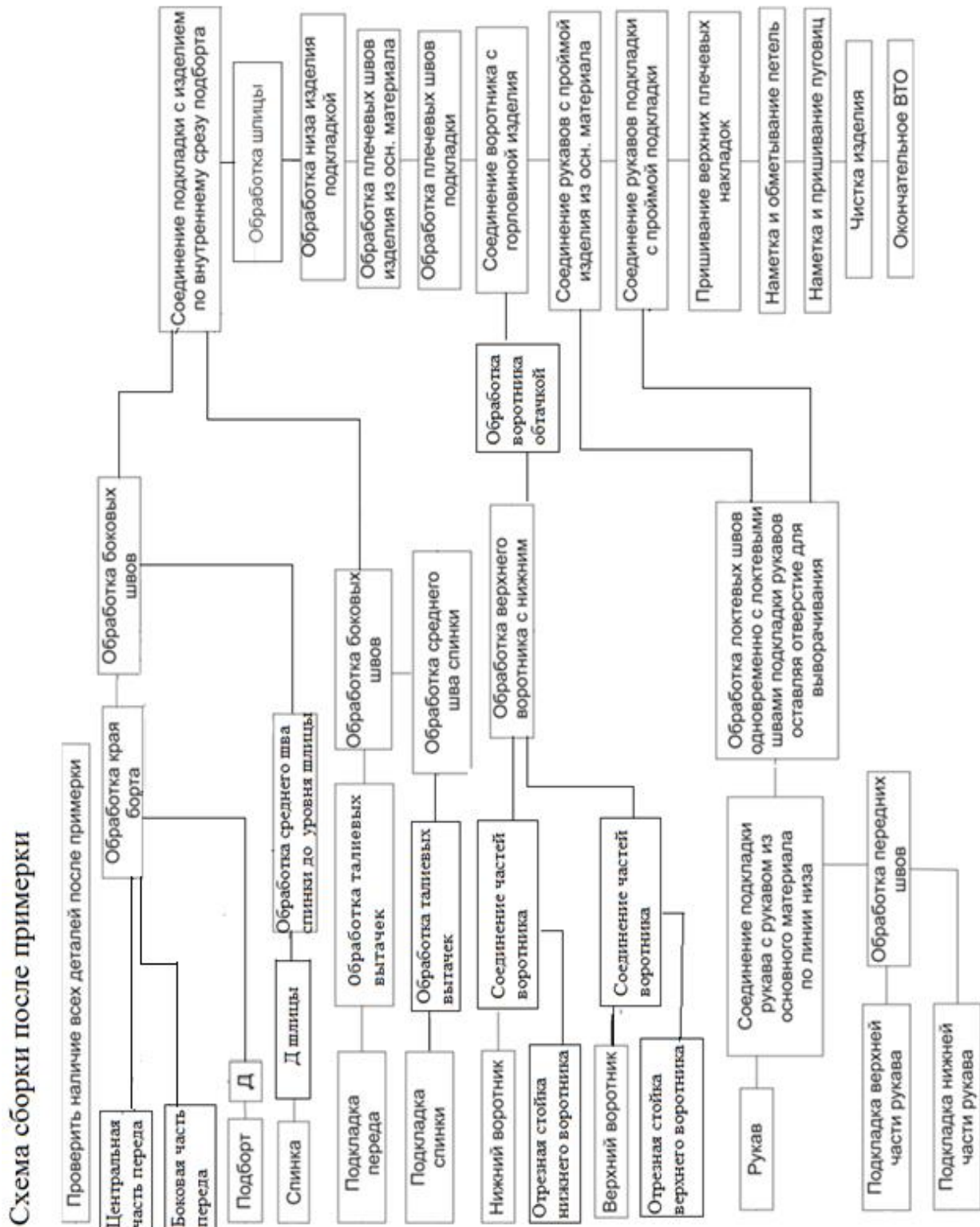


Figure 48 - Scheme of the assembly of the jacket after fitting

Choice of processing methods and equipment

The characteristics of the sewing equipment are presented in table 3.

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Table 3. Characteristics of sewing equipment for a women's suit

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	Janome 1547"	Two-strand shuttle	4500	5.0	5.0	Rack
Overcasting cuts	Suit fabrics, lining fabrics	Janome T-34	Four-strand	1100	5.0	5.0	Rack

Equipment for the WTO is presented in table 4.

Table 4. WTO equipment

Type, brand, company, manufacturer	Purpose equipment	Heating temperature, °C	power, kWt	Steam consumption, wk/h	Dimensions			Weight, kg
					length	width	height	
Eluktrovoy iron UTP-2EP OZLK	Ironing, ironing, decotting, steaming	100-240	0.5-0.6	3	240	125	153	3.0

The characteristics of small-scale mechanization devices are presented in table 5

Table 5. Characteristics of small-scale mechanization devices

Operation requirements	Device name	Fixture brand	Sewing machine class
Buttonholes	Buttonhole foot with ruler and frame	Janome 1547	1022-M class.

The design of product units is developed on the basis of progressive technology, taking into account the sewing properties of materials, the use of modern gaskets and adhesive materials, providing for a high level of mechanization and automation of manual

labor, minimizing labor costs, and high quality of product manufacturing.

Assembly drawings of the designed models of a women's jacket and trousers are shown in Figures 49 and 50.

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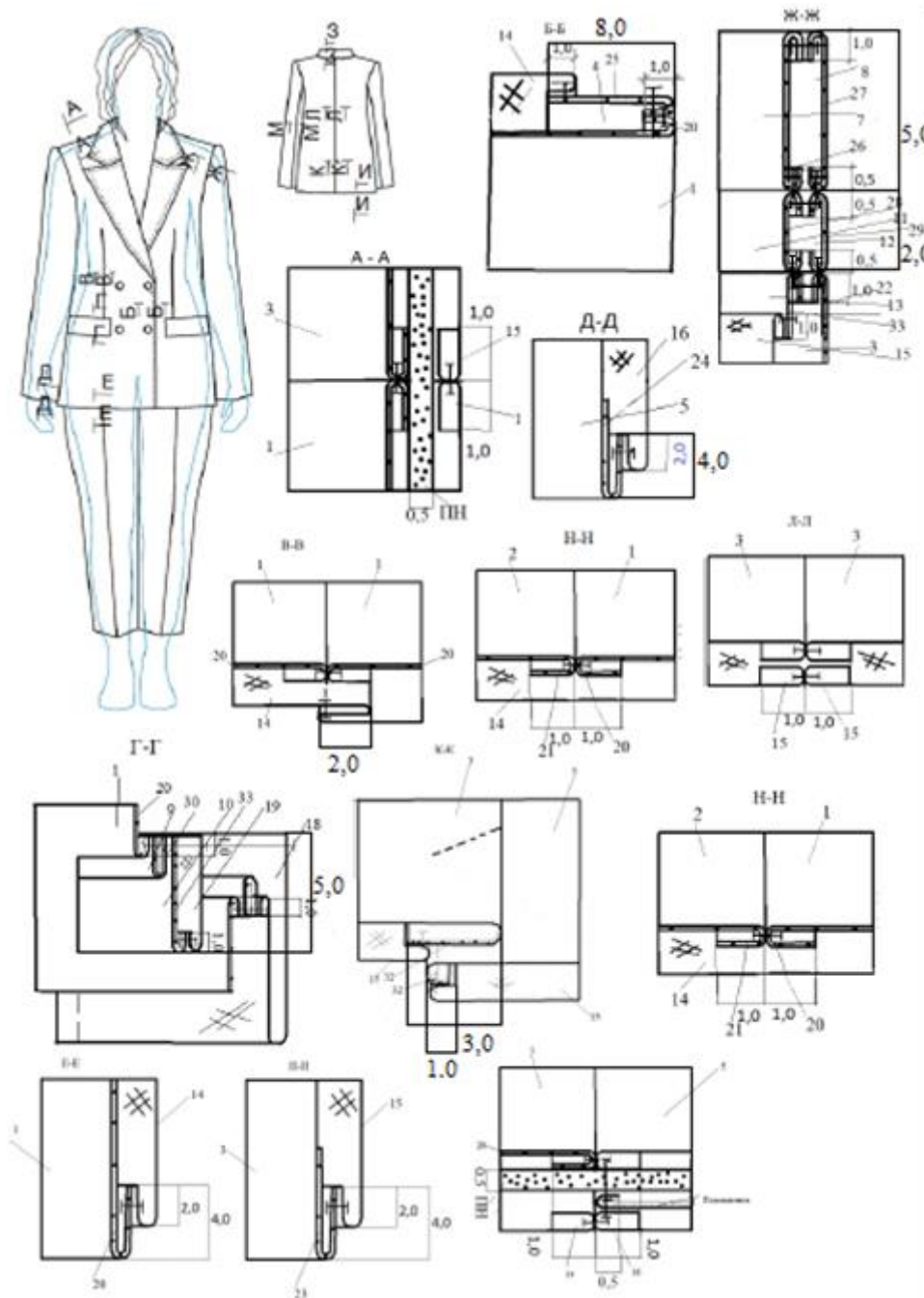


Figure 49 - Assembly drawing of the jacket

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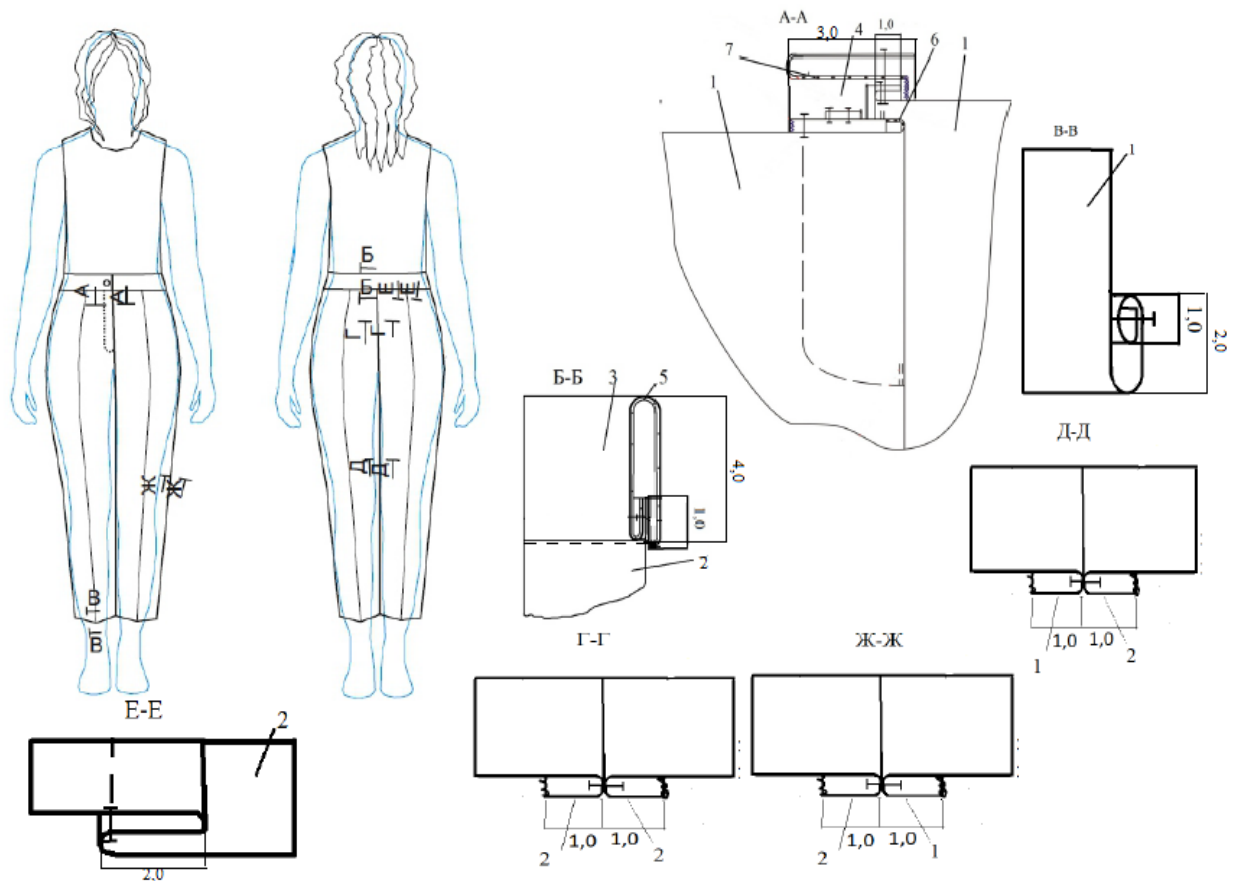


Figure 50 - Assembly drawing of trousers

Conclusion on the section: in this section, the following types of work were carried out: determining the cost of manufacturing the designed model of a women's suit, describing the characteristics of the methods for forming the spatial shape of the main parts of products, developing schemes for assembling products before and after fitting, as well as choosing processing methods taking into account sewing

properties materials and advanced equipment for the manufacture of products.

Analysis of analogue models

During the analysis of the fashion direction, the analog models presented in Figures 51 - 56 were selected.

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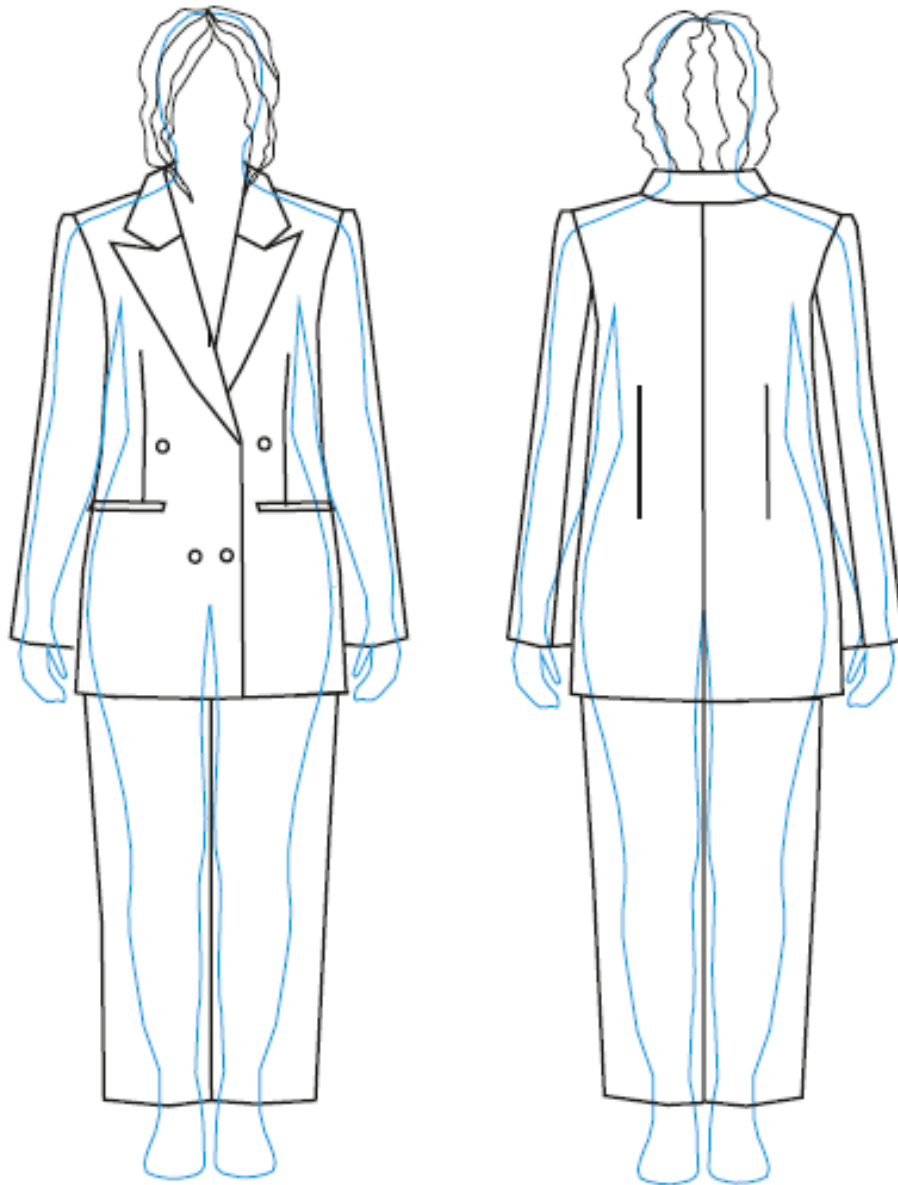


Figure 51 - Sketch of a jacket of an analogue model of a women's suit No. 1

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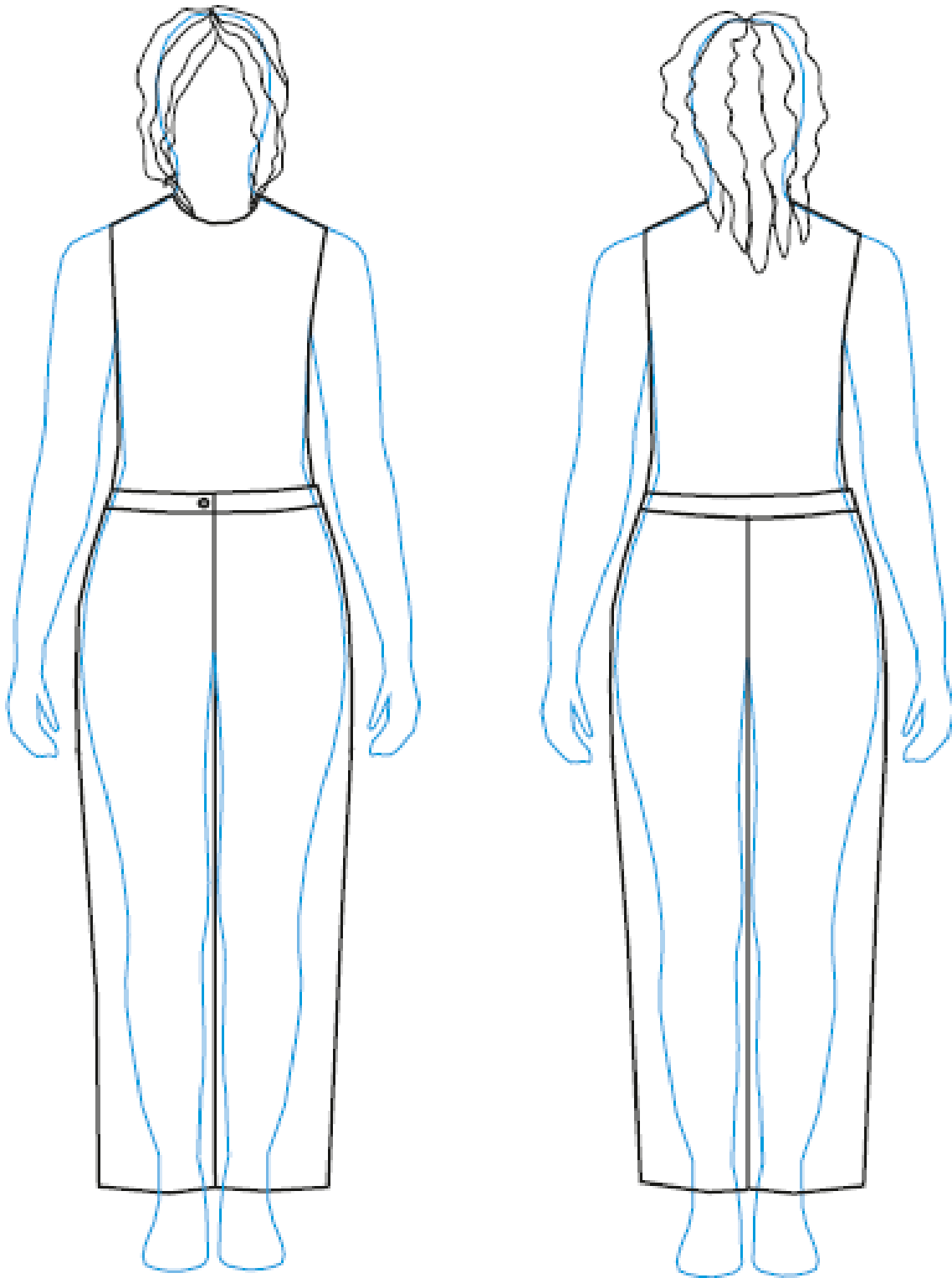


Figure 52 - Sketch of the trousers of the analogue model of the women's suit No. 1

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JIF = **1.500**

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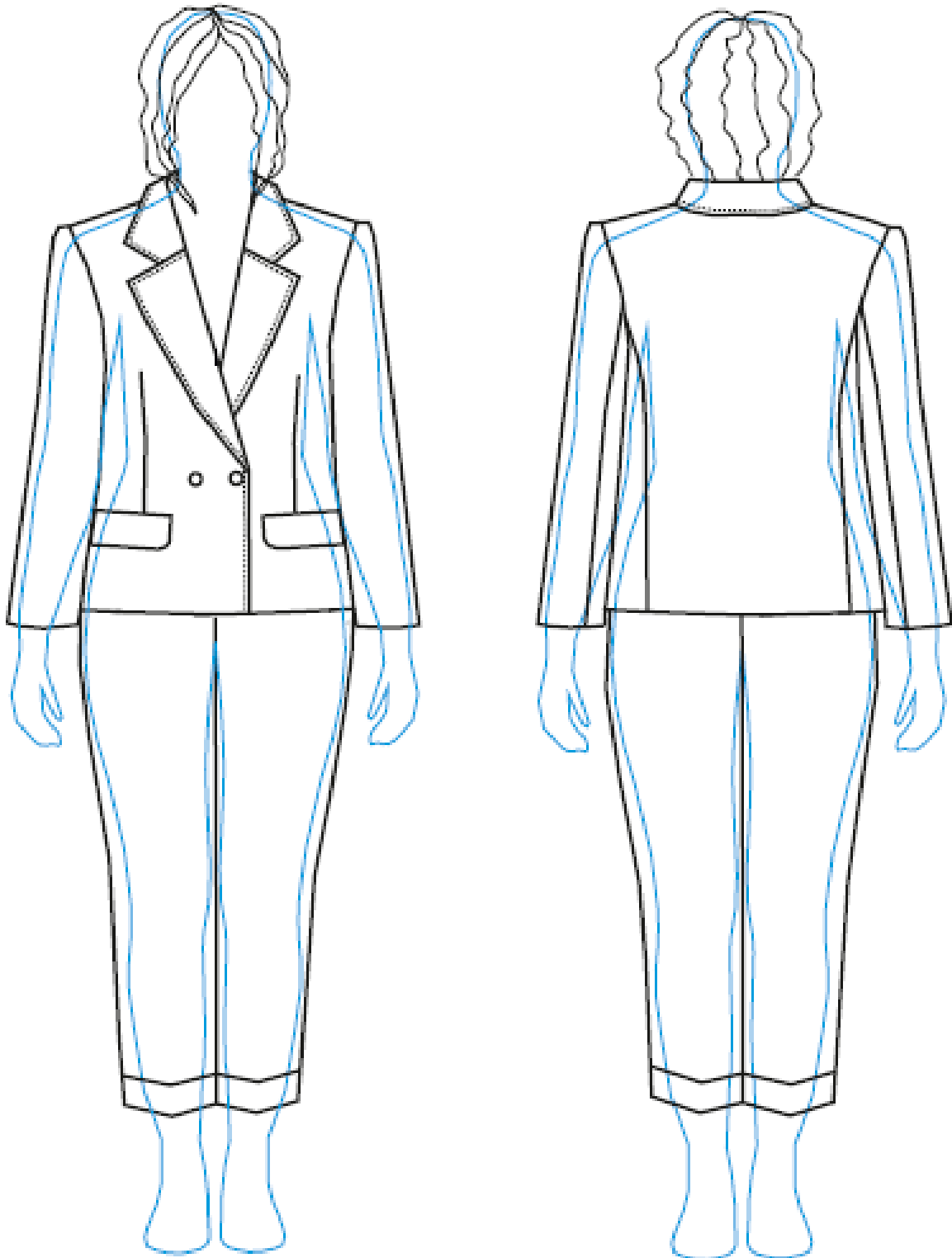


Figure 53 - Sketch of the jacket of the analogue model of the women's suit No. 2

Impact Factor:	ISRA (India) = 6.317	SIS (USA) = 0.912	ICV (Poland) = 6.630
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	GIF (Australia) = 0.564	ESJI (KZ) = 8.771	IBI (India) = 4.260
	JIF = 1.500	SJIF (Morocco) = 7.184	OAJI (USA) = 0.350

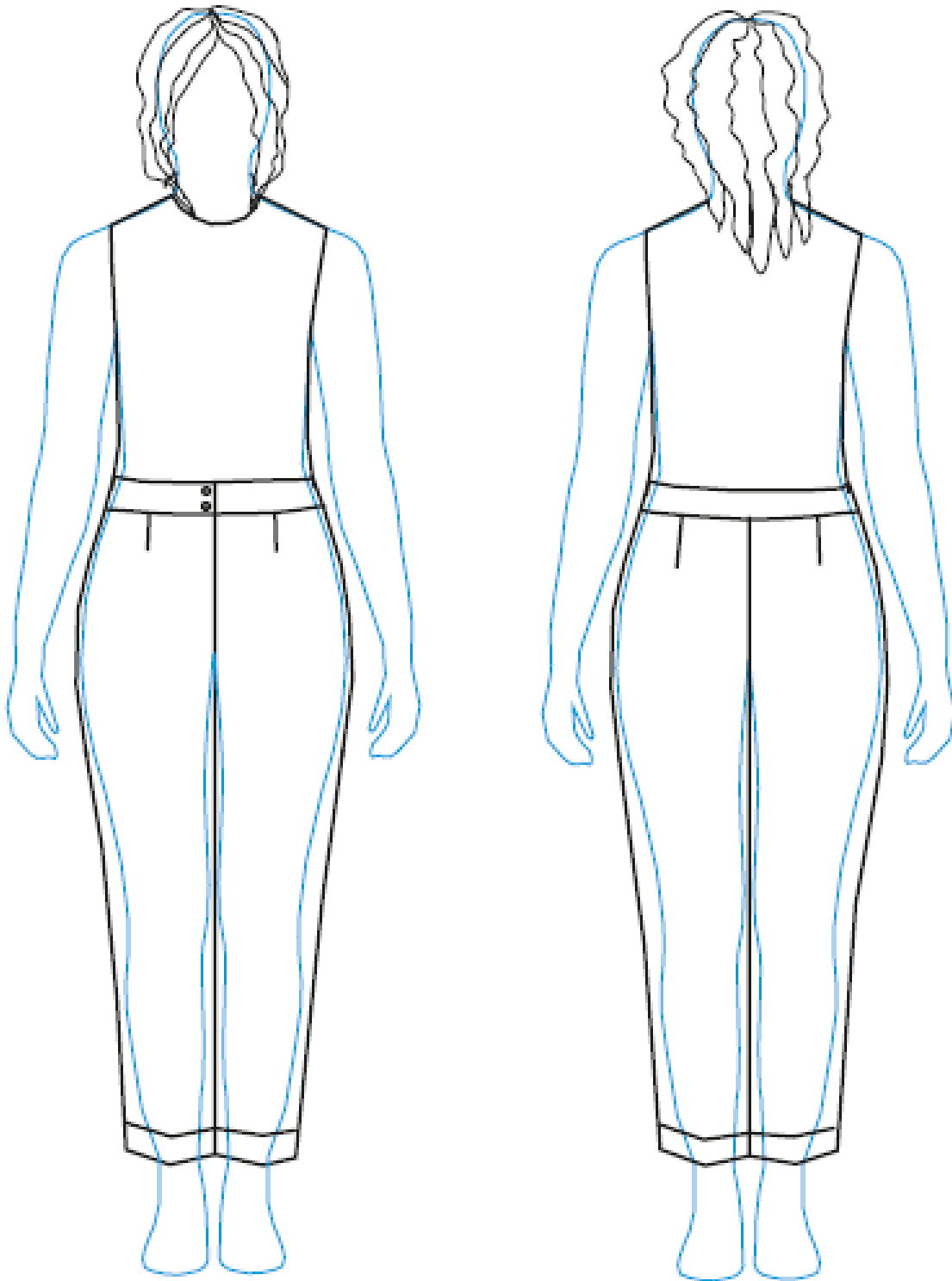


Figure 54– Sketch of the trousers of the analogue model of the women's suit No. 2

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ESJI (KZ) = **8.771**
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ICV (Poland) = **6.630**
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IBI (India) = **4.260**
OAJI (USA) = **0.350**

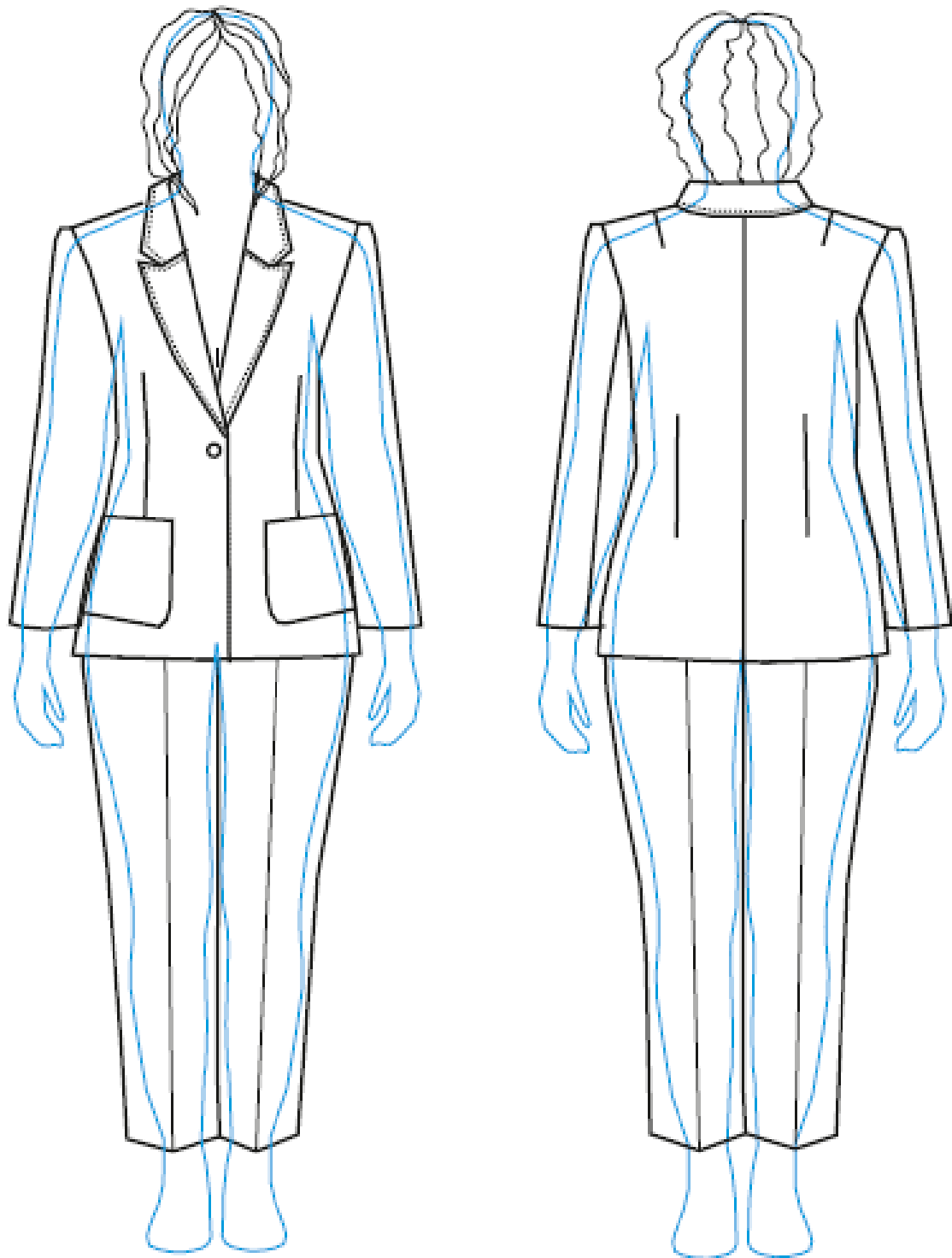


Figure 55– Sketch of a jacket of an analogue model of a women's suit No. 3

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	GIF (Australia) = 0.564	ESJI (KZ) = 8.771	IBI (India) = 4.260
	JIF = 1.500	SJIF (Morocco) = 7.184	OAJI (USA) = 0.350

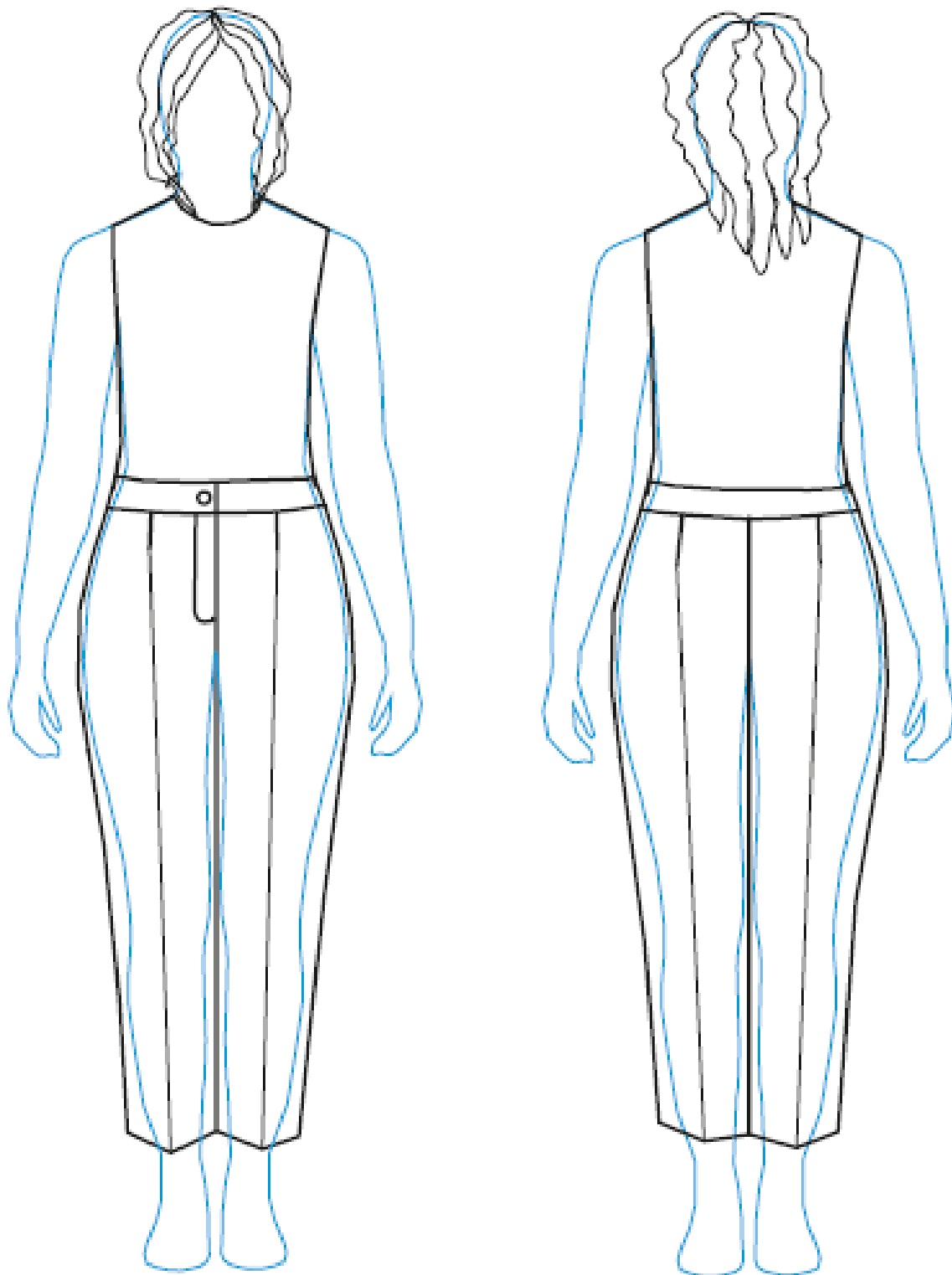


Figure 56– Sketch of a jacket of an analogue model of a women's suit

The characteristics of the external shape and design of the recommended models are presented in Table 6.

Table 6. Characteristics of the external form and design of the recommended models

Model number	product name	Sleeve cut	Silhouette	The nature of division (number and name of longitudinal seams)	Number of darts or folds (longitudinal, transverse, etc.)	The degree of fit of the jacket in the waist area	The degree of fit of the trousers in the hip area	The number of transverse seams, their name and location	Fastener type, neckline shape	Methods for creating a three-dimensional form of a model
1	Jacket	set-in	Straight	11 (side seams, waist darts-undercuts, waist darts on the back, middle back seam, elbow and front sleeve seams)	4	Malaya	-	4 (shoulder, undercut darts)	Offset, open to 2 pairs of overcast buttonholes and buttons.	Combined: constructive and WTO
	Pants	-	Straight	6 (side, middle, step)	0	-	Malaya	0	Backstage	Combined: constructive and WTO
2	Jacket	set-in	fitted	12 (side seams, waist darts-undercuts, reliefs on the back, elbow and front seams of the sleeve)	2	Malaya	-	4 (shoulder, undercut darts)	Offset, open with 2 overcast loops and buttons.	Combined: constructive and WTO
	Pants	-	Tapered to the bottom	6 (side, middle, step)	4	-	Medium	0	With zipper and 2 overcast buttonholes and buttons	Combined: constructive and WTO
3	Jacket	set-in	Straight	12(side seams, waist darts, back waist darts, back shoulder darts, elbow and front sleeve seams)	6	Big	-	2 (shoulder)	Central, open on one swept loop and button	Combined: constructive and WTO
	Pants	-	Tapered to the bottom	6 (lateral, middle, step)	4	-	Medium	0	On a braid-zipper and one swept loop and a button	Combined: constructive and WTO

Pants

Suit for women of the younger age group, made of plain-dyed suit fabric, consisting of a jacket, trousers. Jacket of a straight silhouette, medium volume, 10 cm long below the hip line, with a shifted open fastener, 2 pairs of overcast loops and buttons, as well as with a set-in cut of the sleeve.

The constructive volumetric shape of the product is achieved due to: reliefs on the front and darts-undercuts, a middle seam on the back and an enlarged shoulder girdle.

The back of the jacket with a middle seam, ending with a 15 cm vent.

The front has ribs coming out of the armhole to the bottom of the product, waist darts-undercuts, two side welt pockets with a valve, large valves (5 cm high) with straight ends, the entrance to the pocket is horizontal.

Sleeves are set-in, two-seam, long, of medium volume, slightly narrowed towards the bottom.

Collar - stand-up turn-down with a cut-off stand of a jacket type with straight ends of the collar and sharp ends of the lapels.

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ICV (Poland) = 6.630
PIF (India) = 1.940
IBI (India) = 4.260
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Product on a stitched lining on a bottom from artificial silk.

Pants narrowed to the bottom, moderate volume, shortened.

The front of the trousers with waist darts and ironed creases.

The back of the trousers with waist darts.

Sewn-on belt, 4 cm wide, at the level of the waist line, trousers fastener with a zipper and one swept loop and a button on the front.

Women's jacket

Suit for women of the younger age group, made of plain-dyed suit fabric, consisting of a jacket, trousers.

Jacket of a straight silhouette, medium volume, 10 cm long below the hip line, with a shifted open fastener, 2 pairs of overcast loops and buttons, as well as with a set-in cut of the sleeve.

The constructive volumetric shape of the product is achieved due to: reliefs on the front and darts-undercuts, a middle seam on the back and an enlarged shoulder girdle.

The back of the jacket with a middle seam, ending with a 15 cm vent.

The front has ribs coming out of the armhole to the bottom of the product, waist darts-undercuts, two side welt pockets with a valve, large valves (5 cm high) with straight ends, the entrance to the pocket is horizontal.

Sleeves are set-in, two-seam, long, of medium volume, slightly narrowed towards the bottom.

Collar - stand-up turn-down with a cut-off stand of a jacket type with straight ends of the collar and sharp ends of the lapels.

Product on a stitched lining on a bottom from artificial silk.

Pants narrowed to the bottom, moderate volume, shortened.

The front of the trousers with waist darts and ironed creases.

The back of the trousers with waist darts.

Stitched belt, 4 cm wide, at the level of the waist line, trousers fastening with a lace-zipper and one swept loop and a button on the belt.

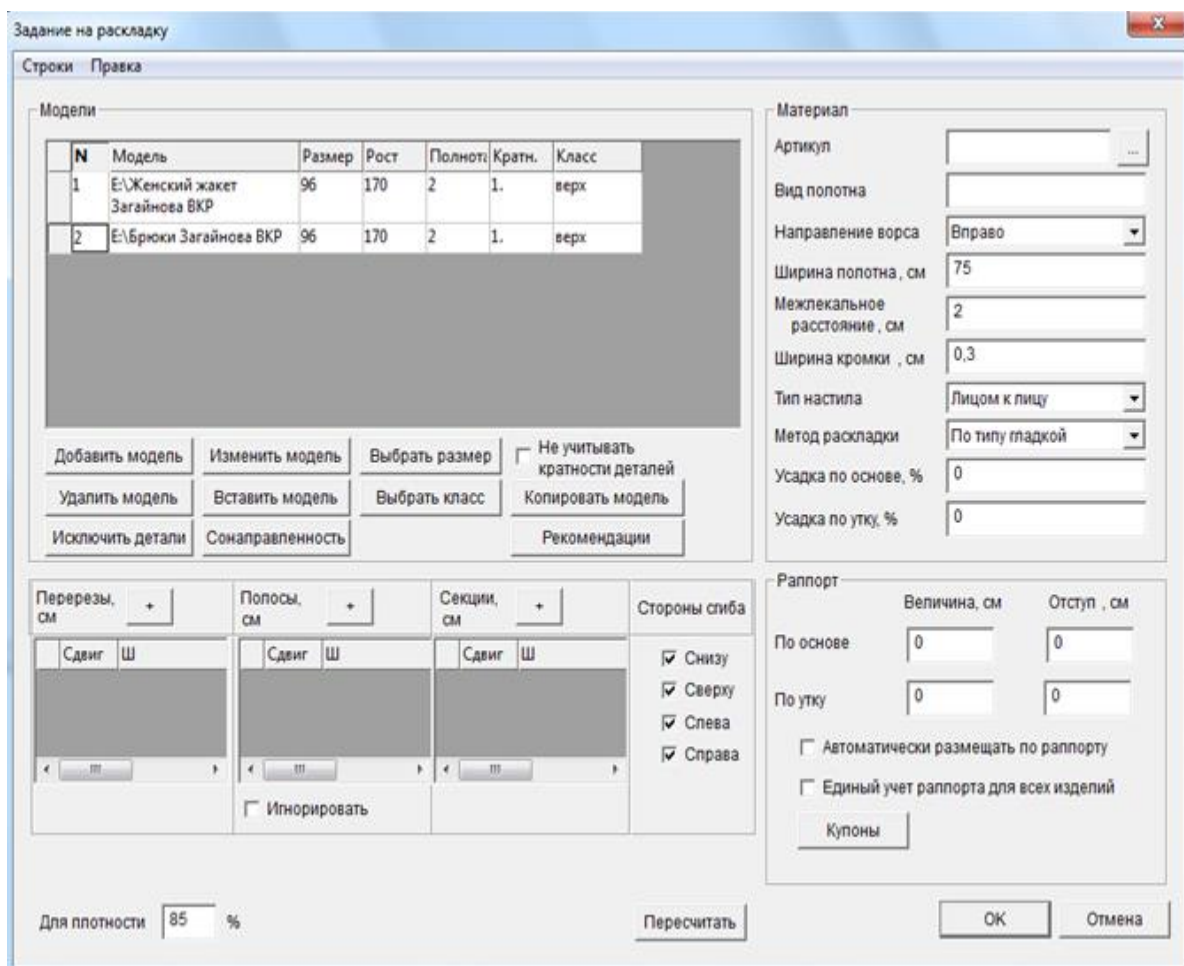


Figure 57 - Task for laying out the details of a women's suit from the main material

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JIF = 1.500	SJIF (Morocco) = 7.184	OAJI (USA) = 0.350

Tasks and layout of the details of the cut of the women's suit

The task for laying out the details of the patterns of a women's suit from the base material is shown in Figure 57.

Figure 58 shows the development of the layout of the parts of a women's suit from the base material in the conditions of CAD "Grace" (version 401) in an automated mode.

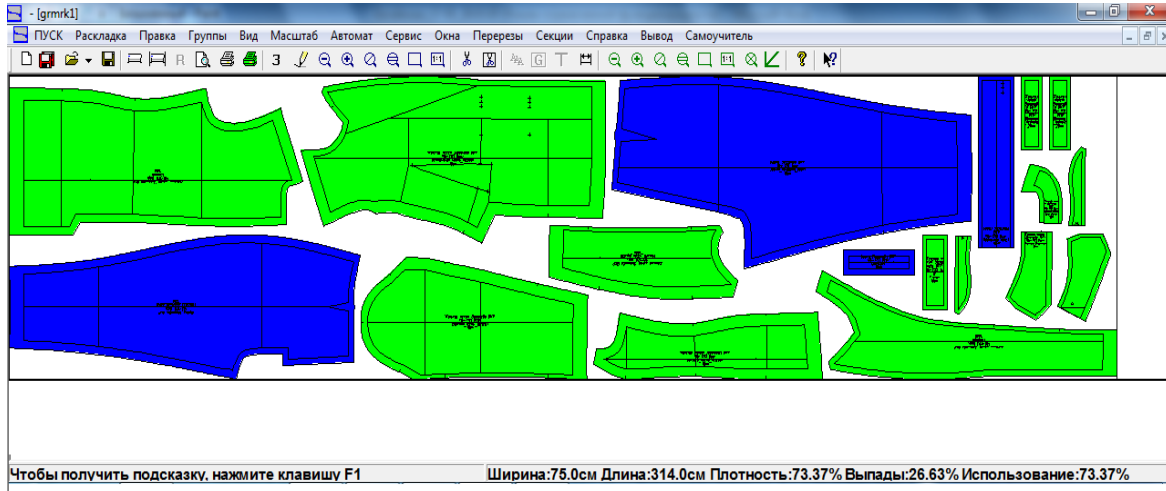


Figure 58 - Development of the layout of the parts of a women's suit from the base material in the conditions of CAD "Grace" (version 401) in an automated mode

Figure 59 shows the development of the layout of the parts of a women's suit from the base material

in the conditions of CAD "Grace" (version 401) in manual mode.

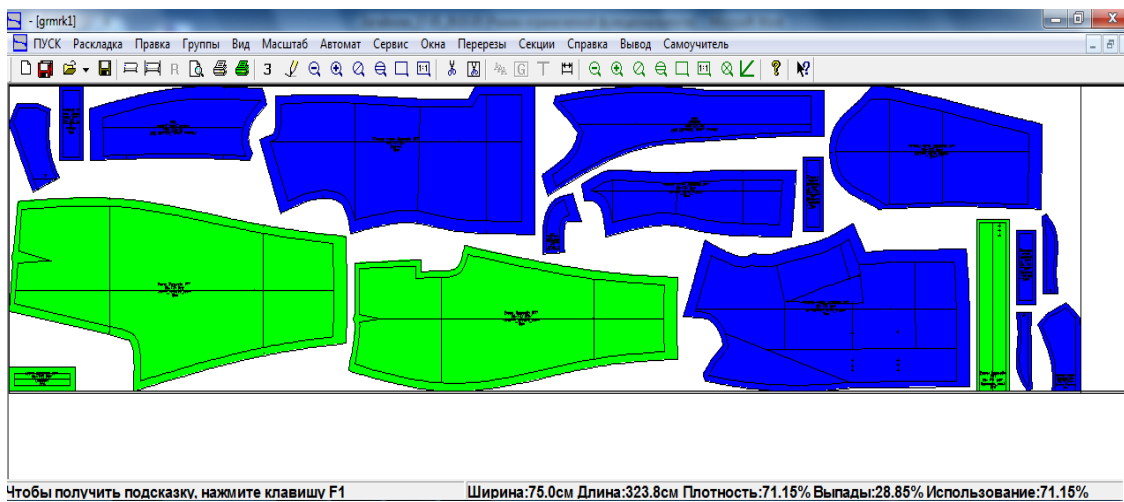


Figure 59 - Development of the layout of the parts of a women's suit from the base material in the conditions of CAD "Grace" (version 401) in manual mode

The task for laying out the details of the patterns of a women's suit from the lining material is shown in Figure 60.

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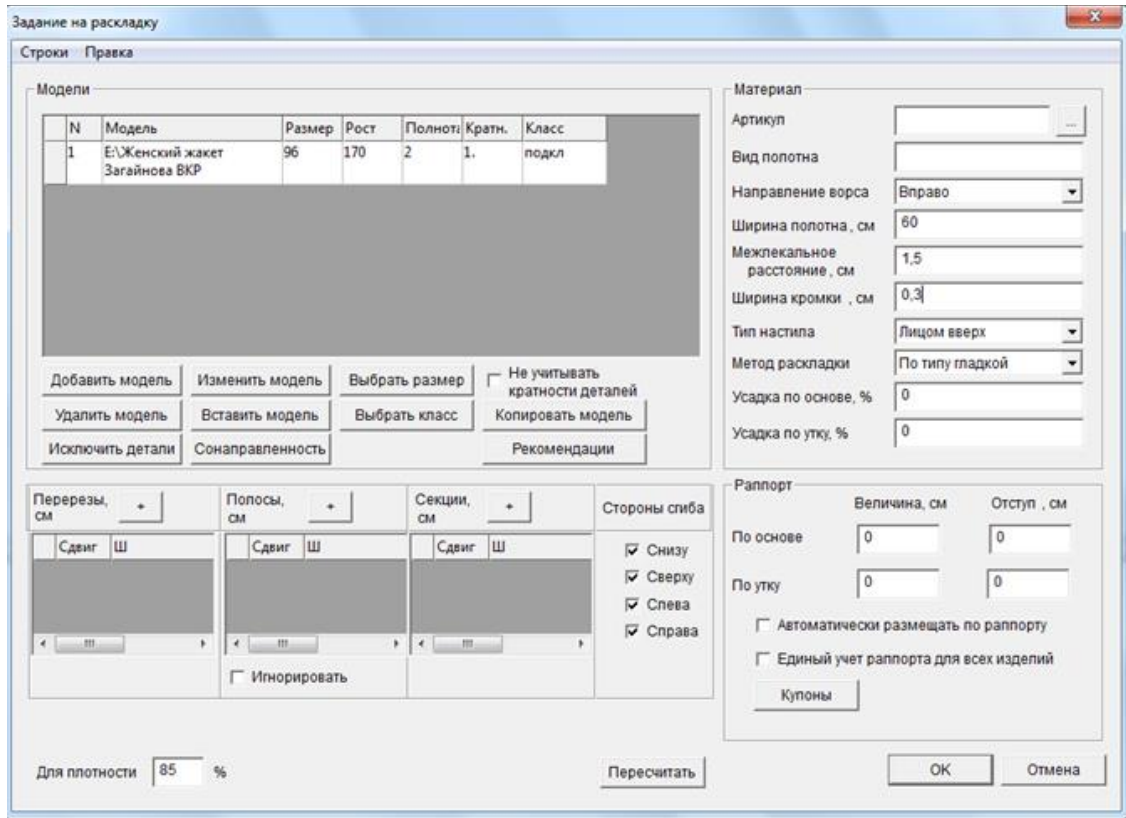


Figure 60 - Task for laying out the details of a women's suit from lining material

Figure 61 shows the development of the layout of the details of the women's suit from the lining

material in the conditions of CAD "Grace" (version 401) in an automated mode.

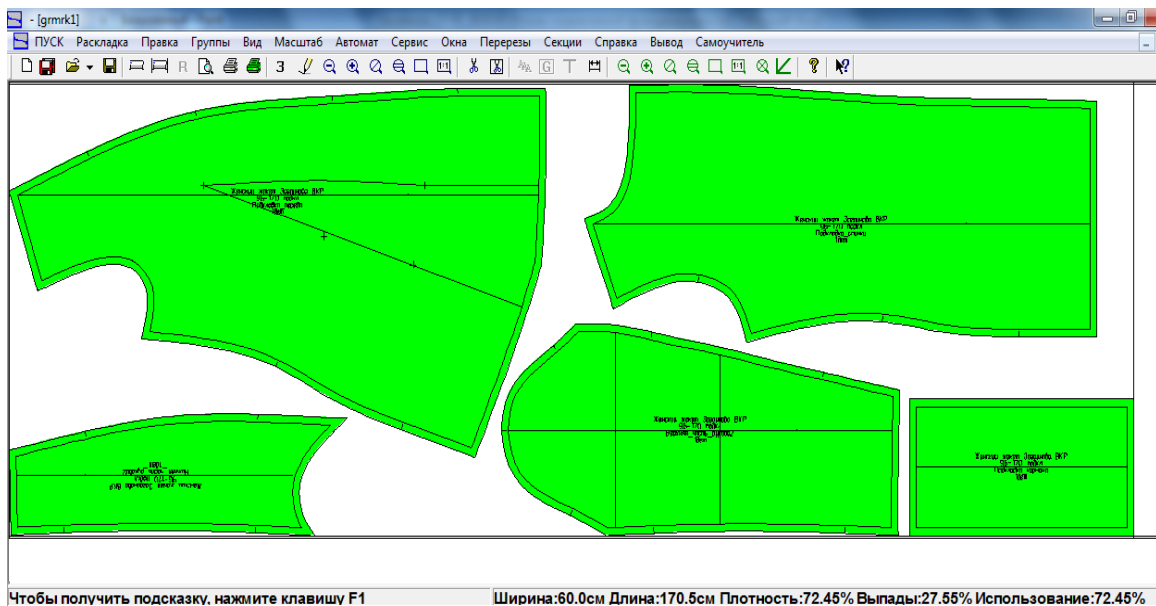


Figure 61 - Development of the layout of the details of the women's costume from the lining material in the conditions of CAD "Grace" (version 401) in an automated mode.

Figure 62 shows the development of the layout of the parts of a women's suit from the lining material

in the conditions of CAD "Grace" (version 401) in manual mode.

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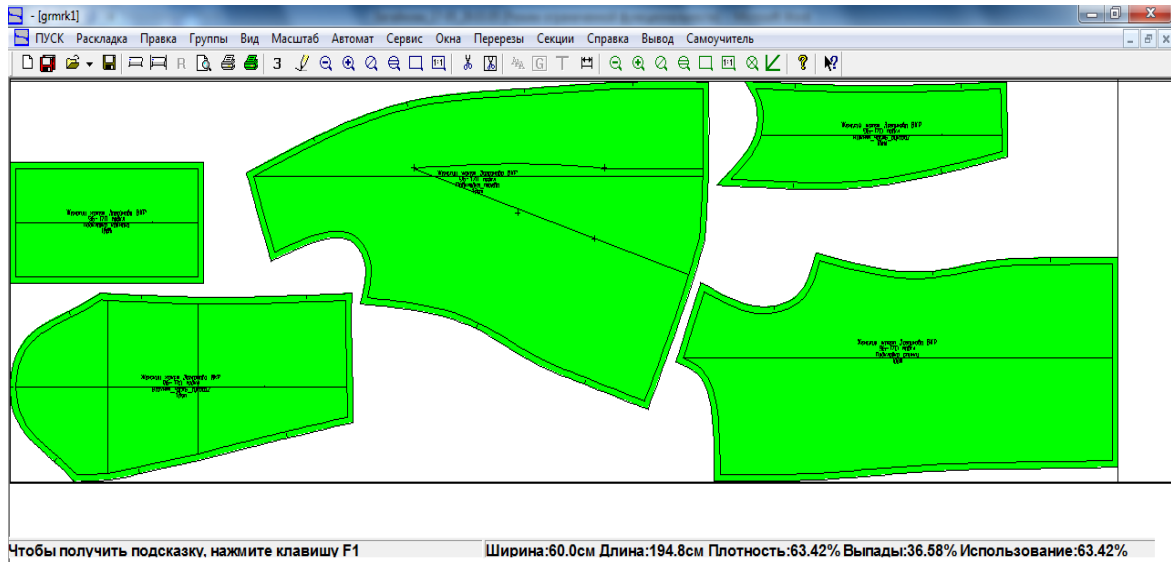


Figure 62 - Development of the layout of the details of the women's suit from the lining material in the conditions of CAD "Grace" (version 401) in manual mode.

The task for laying out the details of the patterns of a women's suit made of interlining material is shown in Figure 63

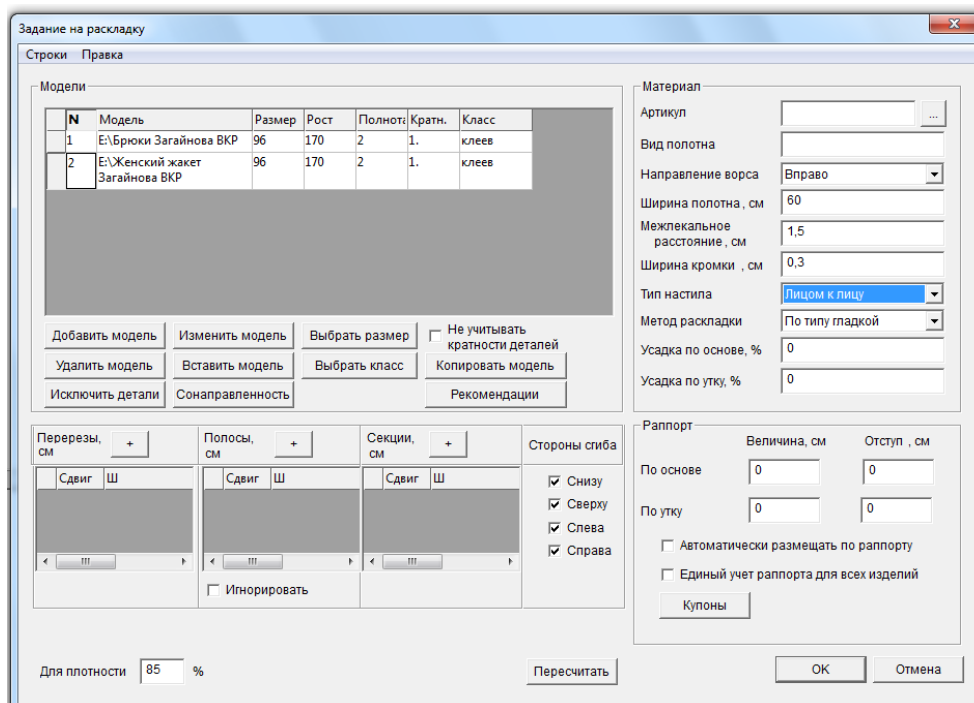


Figure 63 - Task for laying out the details of a women's suit made of cushioning material.

Figure 64 shows the development of the layout of the parts of a women's suit made of cushioning

material in the conditions of CAD "Grace" (version 401) in an automated mode.

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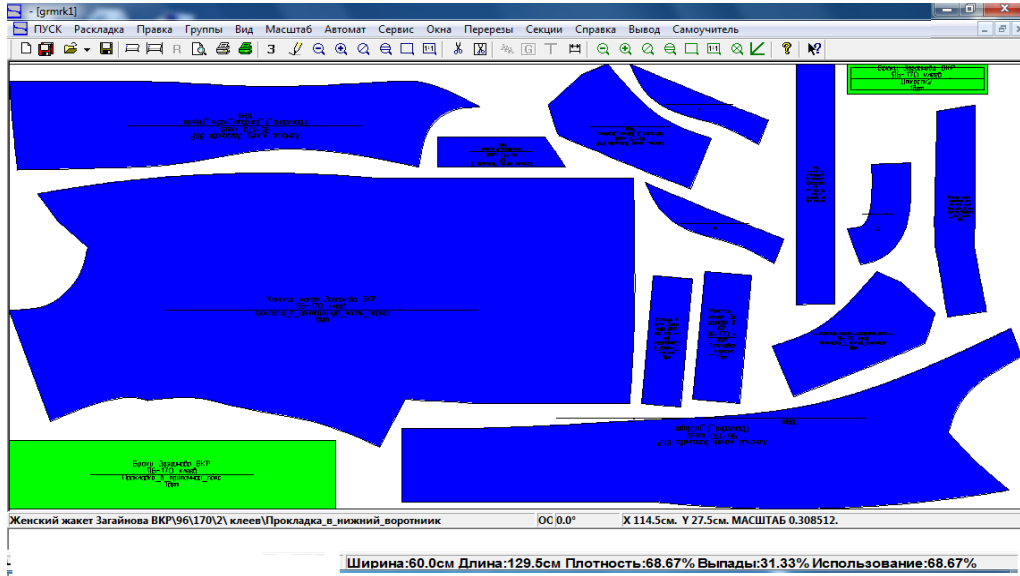


Figure 64 - Development of the layout of the details of the women's suit from the cushioning material in the conditions of CAD "Grace" (version 401) in an automated mode.

Figure 65 shows the development of the layout of the parts of a women's suit made of cushioning

material in the conditions of CAD "Grace" (version 401) in manual mode.

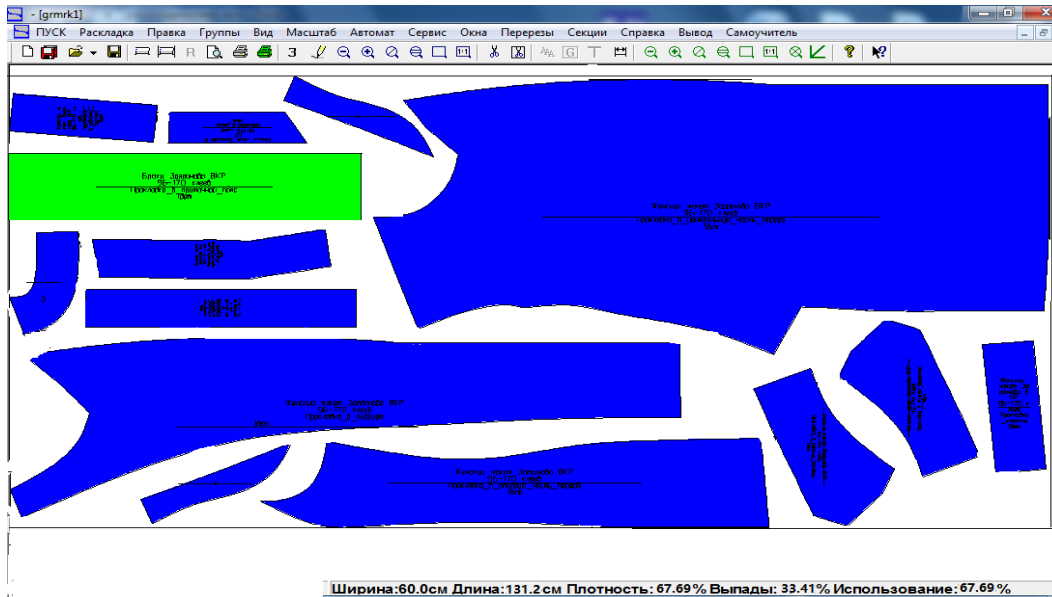


Figure 65 - Development of the layout of the details of the women's suit from the cushioning material in the conditions of CAD "Grace" (version 401) in manual mode.

Appearance of a female costume model

Figure 66 shows the appearance of a women's suit.

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Figure 66 - Appearance of the female costume model

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 the technical regulations of the Customs Union TR TS 007/2011, as well as the requirements for materials, the chemical composition and structure of

which determine all the main 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 the high prospects for increasing the competitiveness of Russian industries in different markets is the production of clothing 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

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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 was developed for women of the younger age group in size 164-84-92, the second fullness 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. Increasing the efficiency of the designed women's suit was 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.

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

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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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