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Changes in Technological Performance of Lastic Knitted Textiles in Different Range

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ABSTRACT: In this article we knit in 3 different options, ie option 1 with 50x1 textile cotton and 25x1 textile silk on a 1 + 1 base, option 2 with a 50x1 textile cotton press and 25x2 textile silk with a 50x1 textile cotton, and option 3 with a 50x2 textile cotton thread. The texture was obtained and the technological parameters were determined.

KEY WORDS: Loop pitch, ring row height, transverse and longitudinal density, loop thread length, surface density.

I. INTRODUCTION

In the context of market relations, one of the key issues today is to improve our economic performance by launching the production of high-quality and high-demand and export-oriented domestic and top knitwear in the country.

After the independence of our country, the expansion of the range of top knitwear is one of the main requirements of our time, given the conditions of market relations and technological capabilities. In particular, knitwear is compact, attractive and in demand. In a market economy, there are a number of requirements for knitwear. For example, it should be high quality, world-class, competitive, taking into account the seasons and fashion trends.

There are a number of methods of designing technological parameters of fabrics in the enterprise of knitwear production, which include: the use of new non-traditional types of raw materials, the creation of new fabrics and the use of practical methods for the analysis of samples; experimental method. This method is usually used in the performance of research related to the production of new tissue from a particular machine, time volume and specific type of raw material.

There are several theoretical methods for determining the technological performance of knitted fabrics. These methods are carried out in any case based on initial factors such as the type of raw material, its linear density or the ring modulus [1, 2, 3].

II. ANALYSIS OF EXISTING FILTERING MATERIALS AND RESEARCH RESULTS

In the design of technological parameters of knitted fabrics, in the knitting fabric production plant in 4 variants, ie 1 + 1 report ribana (rubber) fabric made of 100% cotton fiber on a flat fang machine, 1 + 1 report ribana made of 95% cotton fiber with 5% lycra (rubber) fabric, 5% lycra with 95% cotton fiber 2 + 2 rapport ribbon (rubber) fabric and 100% cotton fiber 2 + 2 report ribbon fabric with cashmere knitwear [4, 5, 6].

Technological indicators of knitted fabric obtained on the basis of rubber 1 + 1 from 25x1 textile silk with 50x1 textile cotton were studied by Professor A.S. Design by the Dalidovich method

1. Determining the thickness of the rope:

$$F = \frac{\lambda}{\sqrt{\frac{1000}{T}}} = \frac{1{,}27}{\sqrt{\frac{1000}{75}}} = 0{,}34 \text{ mm} \quad (1)$$

where: λ - coefficient depending on the type of thread.

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2. The ring pitch is determined by the following formula:

$$A = 4 \cdot F = 4 \cdot 0{,}34 = 1{,}36 \ mm \qquad (2)$$

3. Determine the height of the ring row:

$$B = c \cdot A = 0{,}865 \cdot 1{,}36 = 1{,}17 \ mm \quad (3)$$

where: c=0,865 *mm* c- density ratio coefficient (determined experimentally for each tissue type).

4. Density across:

$$P_{\Gamma} = \frac{50}{A} = \frac{50}{1{,}36} = 37 \ ring \qquad (4)$$

5. Density along the length:

$$P_{B} = \frac{50}{B} = \frac{50}{1{,}17} = 43 \ ring \qquad (5)$$

6. The length of the ring strip is determined by the following formula:

$$\ell = \frac{78{,}5}{P_{\Gamma}} + \frac{100}{P_{B}} + \pi \cdot F = \frac{78{,}5}{37} + \frac{100}{43} + 3{,}14 \cdot 0{,}34 = 5{,}5 \ mm \quad (6)$$

7. The surface density of knitwear is found using the following formula:

$$Q = \frac{0{,}4\ell \cdot P_{\Gamma} \cdot P_{B} \cdot T}{1000} = \frac{0{,}8 \cdot 5{,}5 \cdot 37 \cdot 43 \cdot 75}{1000} = 525 \ g/m^2 \qquad (7)$$

The technological performance of the knitted fabric obtained from 25x2 textile silk with 50x1 textile cotton in the press weaving on the tire base was demonstrated by Professor A.S. Design by the Dalidovich method

1. Determining the thickness of the rope:

$$F = \frac{\lambda}{\sqrt{\frac{1000}{T}}} = \frac{1{,}25}{\sqrt{\frac{1000}{50}}} = 0{,}28 \ mm \quad (8)$$

where: λ - coefficient depending on the type of thread.

2. The ring pitch is determined by the following formula:

$$A = 4 \cdot F = 4 \cdot 0{,}28 = 1{,}12 \ mm \qquad (9)$$

3. Determine the height of the ring row:

$$B = c \cdot A = 1{,}12 \cdot 0{,}865 = 0{,}97 \ mm \qquad (10)$$

where: c=0,865 *мм* c- density ratio coefficient (determined experimentally for each tissue type).

4. Density across:

$$P_{\Gamma} = \frac{50}{A} = \frac{50}{1{,}12} = 45 \ ring \qquad (11)$$

5. Density along the length:

$$P_{B} = \frac{50}{B} = \frac{50}{0{,}97} = 51 \ ring \qquad (12)$$

6. The length of the ring strip is determined by the following formula:

$$\ell = \frac{78{,}5}{P_{\Gamma}} + \frac{100}{P_{B}} + \pi \cdot F = \frac{78{,}5}{45} + \frac{100}{51} + 3{,}14 \cdot 0{,}28 = 4{,}6 \ mm \quad (13)$$

7. The surface density of knitwear is found using the following formula:

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$$Q = \frac{0{,}4\ell \cdot P_{\Gamma} \cdot P_{B} \cdot T}{1000} = \frac{0{,}8 \cdot 4{,}6 \cdot 45 \cdot 51 \cdot 50}{1000} = 422{,}3 \ g/m^2 \quad (14)$$

The technological performance of the knitted fabric obtained from 50x2 textile cotton fiber in the tire-based press harvest was demonstrated by Professor A.S. Design by the Dalidovich method

1. Determining the thickness of the rope:

$$F = \frac{\lambda}{\sqrt{\frac{1000}{T}}} = \frac{1{,}25}{\sqrt{\frac{1000}{50}}} = 0{,}28 \ mm \quad (15)$$

where: λ - coefficient depending on the type of thread.

2. The ring pitch is determined by the following formula:

$$A = 4 \cdot F = 4 \cdot 0{,}28 = 1{,}12 \ mm \quad (16)$$

3. Determine the height of the ring row:

$$B = c \cdot A = 1{,}12 \cdot 0{,}865 = 0{,}97 \ mm \quad (17)$$

4. Density across:

$$P_{zy} = \frac{50}{A} = \frac{50}{1{,}12} = 45 \ ring \quad (18)$$

5. Density along the length:

$$P_{B} = P_{zy} / c = 50 / 0{,}97 = 51 \ ring \quad (19)$$

where: c=0,865 *мм* c- density ratio coefficient (determined experimentally for each tissue type:

$$\ell = \frac{78{,}5}{P_{\Gamma}} + \frac{100}{P_{B}} + \pi \cdot F = \frac{78{,}5}{45} + \frac{100}{51} + 3{,}14 \cdot 0{,}28 = 4{,}6 \ mm \quad (20)$$

7. The surface density of knitwear is found using the following formula:

$$Q = \frac{0{,}8 \cdot \ell \cdot 2 \cdot P_{\Gamma} \cdot P_{B} \cdot T}{1000} = \frac{0{,}8 \cdot 4{,}6 \cdot 45 \cdot 51 \cdot 50}{1000} = 422{,}3 \ g/m^2 \quad (23)$$

III. EXPERIMENTAL RESULTS

Technological parameters of different range of rubber knitted fabrics are given in Table 1.

1- table

Technological indicators of knitted fabrics of various assortments

t / r	Knitwear tissue fibrous composition	Yarn thick-league, mm	The ring step, mm	The ring series high-ligi, mm	Density		The ring ipining long-gi, mm	Poverxnostnaya plotnost, g / m^2
					transverse on	Height on		
1	Knitted fabric made of 25x1 textile silk with 50x1 textile cotton on a rubber 1 + 1 base	0,34	1,36	1,17	37	43	5,5	525
2	Knitted fabric from 25x2 textile silk with 50x1 textile cotton in the press base at the base of the tire	0,29	1,14	1,0	41	58	4,73	386,1
3	Knitted fabric made of 50x2 textured cotton fiber in a tire press at the base of the tire	0,28	1,14	0,9	44	55	4,88	341,8

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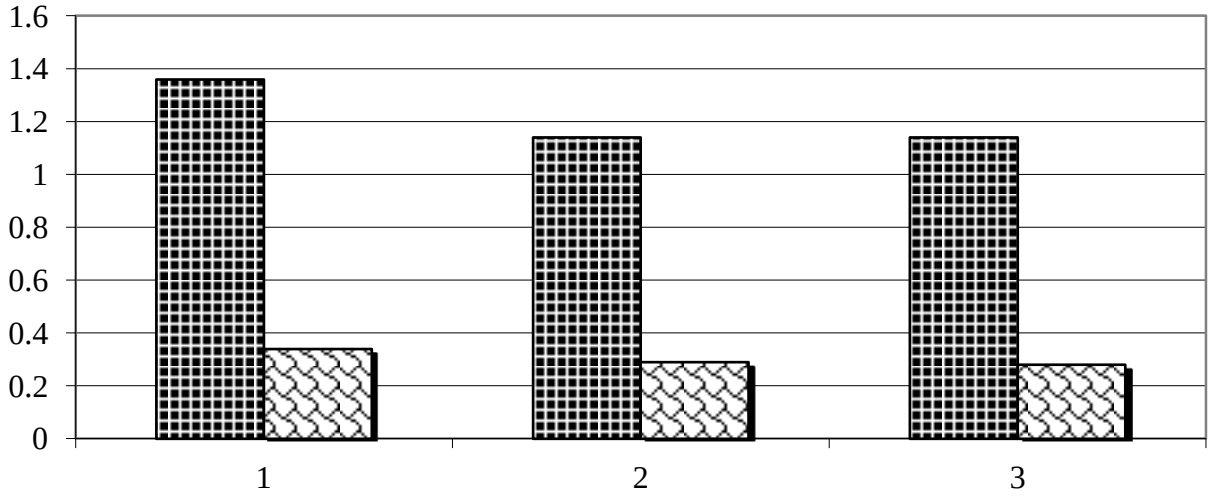
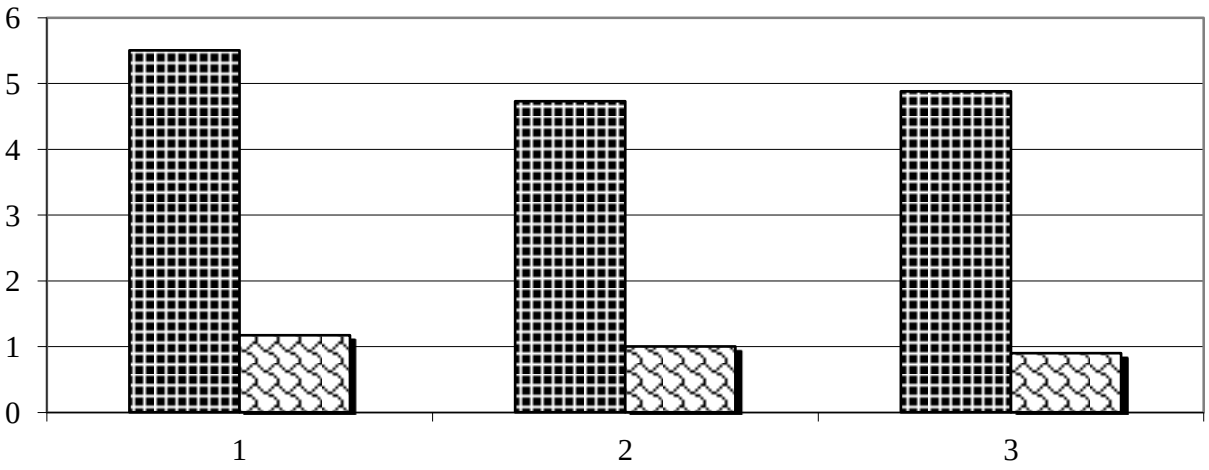
Technological parameters of different types of rubber knitted fabrics are shown in Figures 1-4.



The composition of the mixture

Figure 1. Variation of yarn thickness and ring pitch in different assortment of rubber knitted fabrics.
- ring step; - thread thickness.



The composition of the

Figure 2. Variation of ring row height and ring strip length in rubber assortment fabrics of different assortment.
- the length of the loop rope; - ring row height.

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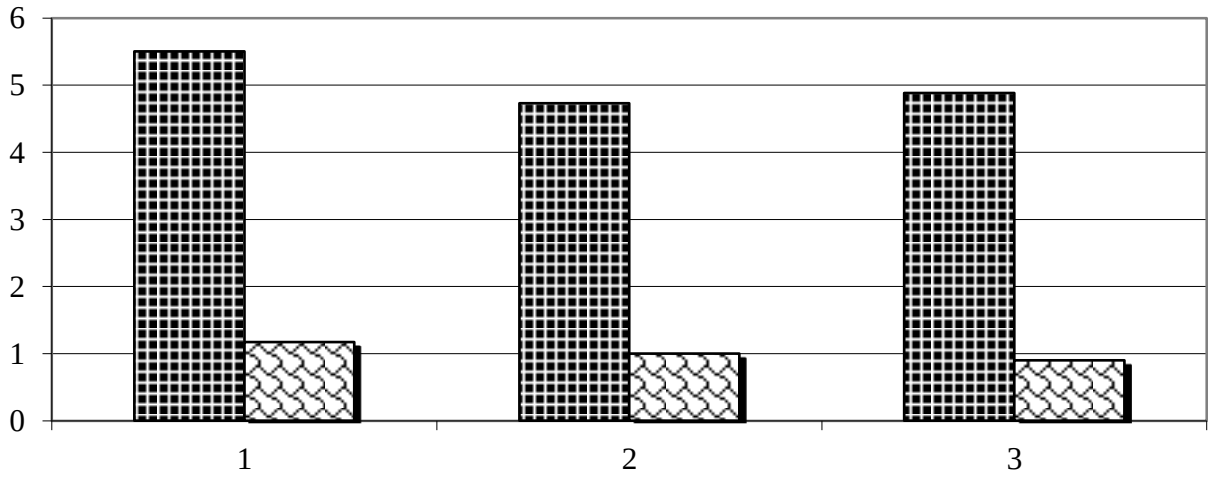
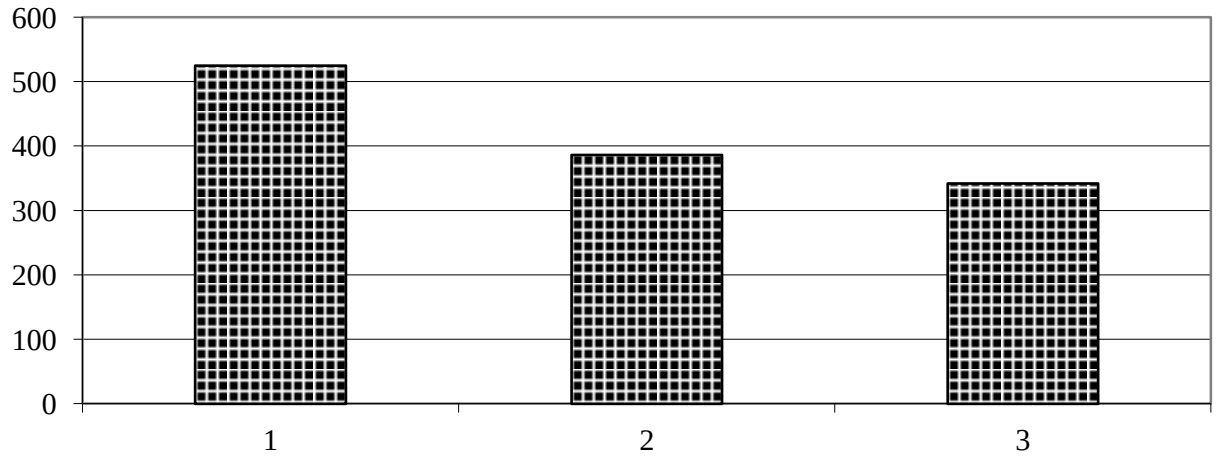


The composition of the

Figure 3. Transverse and longitudinal density changes in different assortment of rubber knitted fabrics.
along the longitudinal; - on the transverse.



The composition of the

Figure 4. Variation in surface density of rubber knitted fabrics in different assortments.

Analyzing the technological performance of different assortment of rubber knitted fabrics, the yarn thickness in the knitted fabric obtained on the basis of rubber 1 + 1 from 25x1 textile silk with 50x1 textile cotton is 0,34 mm, loop pitch 1,36 mm, loop row height 1,17 mm., transverse density 37, longitudinal density 43, loop yarn length 5,5 mm, surface density 525 g/m^2, 25x2 textile silk yarn thickness of 0,29 mm ring pitch 1,14 mm, ring row height 1,0 mm, transverse density 41, longitudinal density 58, loop thread length 4,73 mm, surface density 386,1 g / m^2, The thickness of the yarn in the knitted fabric made of 50x2 textile cotton fiber in the press weave at the base of the tire is 0,28 mm, loop pitch 1,14 mm, loop row height 0,9 mm, transverse density 44, longitudinal density 55, loop yarn length 4,58 mm, surface density was 341,8 g / m^2.

IV. CONCLUSION AND FUTURE WORK

In summary, the yarn thickness of rubber knitwear of different assortment ranges from 0.28 to 0.34 mm, ring pitch from 1.14 to 1.36 mm, ring row height from 0.9 to 1.17 mm, transverse density 37 from 44 to 58, longitudinal density from 43 to 58, loop length from 4.58 to 5.5 mm, surface density from 341.8 to 525 g / m^2.

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