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Creation of Weaving Enterprises with a New System on the Basis of Automation of the Sizing Process

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ABSTRACT: The article analyzes the amount of waste in the preparation of threads for weaving, including during the sizing process. According to research results, the tendency to use threads in the manufacturing process is that increasing the speed and number of threads does not give the expected results. The relationship of reducing the number of warp threads with their quality during sizing. With the introduction of the sizing and warping processes, it improves the quality of the technology for producing the main strands, technological waste is reduced, and continuous operation is ensured using modern information and communication technologies.

I. INTRODUCTION

The cost-effectiveness of textile production depends on many factors, mainly on the quality of the yarn made in the manufacturing department. The poor quality of the body will affect not only the productivity of the weaver, but also the quality of the product. Over the past 10-15 years, weaving companies have seen a significant increase in the value of raw materials. The largest amount of waste is in the process of stripping and consists of "soft" non-woven yarn and glue tips. Although the "soft" type of waste occurs in the grinding machine, its causes are due to the poor selection process.

The threads in the "soft" waste occured in the process of sizing are the result of misalignment of the lengths of the threads on the group coils [1].

In the process of sizing, when the threads are broken, a non-simultaneous stopping of the measuring shaft and warping shaft occurs, which increases with increasing diameter of the winding. In the textile practice, yarn breakage is specific, but the diameter of the ribbon is not measured in our study, which affects the length of the yarn surface.

According to the description of the modern Swiss Beninger group pickup machine, the car spins 1 to 1.5 times at the stop. But the measuring shaft stops faster. As a result, the length of the strings wrapped around the body roll and the gauge indicator differ.

Table 1 shows the low number of reelthreadsin the "TashTIBtex" (441), which is related to the capacity of the tensioning frame installed in it. CLC Spentex Tashkent Tootepa has a modern pickup frame, no more than 1.4 times of the number of reel threads compared to TashTIBtex.

Table 1
Waste from the textile mills

№	Fill indicator and waste volume indicators	Weaving enterprise					
		TashTIBtex		A.Akbaralitexs X.K.		CLC Spentex Tashkent To'ytepa	
		Practical	Normative	Practical	Normative	Practical	Normative
1	Number of threads in the coin	3087	3087	5193	5193	6220	6220
2	Number of threads on	441	441	587	587	622	622

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	the coil						
3	Number of reels in the group	7	7	9	9	10	10
4	Length of coil yarn L_T(m)	1100	27367	3000	20916	11000	17500
5	L_1 (m)	2,5	2,5	2,5	2,5	2,5	2,5
6	L_2 (m)	26	26	26	26	26	26
7	L_3 (m) 1-ғалтакда	10	L_T*0,02	6	L_T*0,02	4	L_T*0,02
	2- coil	16		7		8	
	3- coil	28		5		9	
	4- coil	10		11		7	
	5- coil	28		13		29	
	6- coil	30		7		11	
	7- coil	20		14		5	
	8- coil	-		13		7	
	9- coil	-		20		15	
	10- coil	-		-		6	
8	Average length of band reel	20	22	10	18	10	22
9	L_4 (m)	5	5	5	5	5	5
Total amount of waste, %		1,8	0,32	1,75	0,36	1,3	0,3

Normative and computational values of total waste in the process were compared. In all enterprises, the amount of waste is much higher than the norm. Experimental observations have shown that as soon as the first rope ends in a group coil, the residual threads remain at different lengths. In the existing technology for the preparation of warp threads during sizing, in addition to the release of a large amount of waste, a number of other disadvantages are also known. Including, an increase in the number of warp threads used to produce fabrics with a large width value, negatively affect the quality characteristics of the warp threads.

In this direction, data on reprocessing units was also published by the Japanese textile machinery industry "Sudakoma", German "Zucker Muller", "Hakoba" andalso Swiss "Benninger" [2].

The determination of the sizing speed of the three methods with the new technology showed that the minimum sizing speed is 175 m / min. During the re-packing process, 150 m / min was taken from the vehicle description. The estimated theoretical productivity is 753 kg / h in the first variant and decreases with the linear density of the threads in the later versions. With current technology, the productivity in all versions is around 410 kg / h.

There is a decrease in theoretical productivity by up to 1.5 times while threading the yarn using the new technology. This is due to a decrease in the number of threads for the warp and a decrease in sizing speed. However, this difference can only be observed during the process of sizing threads.

But, the existing and new technologies for sizing warp threads consist of 2 processes: in the existing technology these are processes of warping and sizing, the new technology consists of processes of sizing-warping and rewinding. Comparing them requires determination of average productivity. The table shows that this indicator is 1.3 to 2.2 times higher than the average productivity.

Another reason for the high efficiency of the new technology is the fact that the that eliminates the process of changing the accumulated warping coil. It is well-known that the practical efficiency depends on the machines of the coefficient of useful time, the cost of which is taken into account for technological reasons of the machine, and time for the machine maintenance and personal needs.

According to this technology, the threads from bobbins located on the warp frame are subjected to a sizing process and rewound to warp coils. In contrast to the existing sizing machine using the new technology, warp threads are wound not on the warp roller, but on cone-shaped bobbins.The threads are divided into warp coils, then are grouped

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and wound on weaving reels on a rewinder. According to this technology, in the process of rewinding the main threads from bobbins to warp rollers, a small amount of threads is sieved.This contributes to the ability to timely avoid gluing threads together. Another advantage of the new technology is the possibility of eliminating defects in the threads during rewinding that occur during sizing. The possibility of ensuring uninterrupted process of the process in the new set of modern information and communication technologies was identified.In the proposed sizing-warping technology, the speed of the threads is 200-300 m / min and it is recommended that the warping frame be used to ensure a continuous sizing process. The process utilized the possibility of moving the unit from computer working speed to slow speed when moving the threads from the working coil to the spare coil.

That means that 20 to 30 tons of valuable yarn is wasted at the factories that produce 2-3 tons of yarn a year.In order to address this shortcoming, an innovative technology for weaving has been developed [1].

Moreover, in the known technology the warping process is excluded and according to the new technology, the warping coil is formed during sizing.

In the unit, located on the frame of the bobbin are used as supply winding. In the unit, located on the frame of the bobbin are used as supply winding. On the frame in each nest there are simultaneously two working bobbins and spare bobbins, therefore the end of the thread from the working bobbin is tied to the beginning of the thread from the spare bobbin, ensuring uninterrupted operation of the unit.This method was created in the middle of the last century and has caused a lot of noise. But over time, continuous sampling was rarely used in the production. This is because ropes are wrapped in M-150 reeling machines, and the length of the threads varies.Now there is a device that measures the length of the rope wrapped around the coil. In addition, a modern grinding unit is computerized, which allows the unit to move from the working coil to the spare coil , from the working speed to the "slow" speed of the knots.

In the process of twisting, the "hamut" can cause the rope to be tucked into one of the drums or drums in any rotational motion. In the existing technology, the worker cuts the "raw" and attaches it to the rope located next to it. The ring comes to the knitting stand and stops it, and then the weaver removes the ring. Despite the fact that in the technology department, modern reputable firms have been computerized by Swiss Beninger and Sucker Müller, Germany, the problems with selecting and trapping threads are eliminated only at the weaving machine.

According to the new technology, the threads worked out on the sizing unit are grouped, their threads are connected and, with the help of a rewinding machine, wound onto a warping roller.The proposed technology prevents thread defects that occur during sizing.

At present, there is no need for a high speed sizing process, as 30-50 weaving machines are equipped at modern private weaving enterprises. Therefore, we recommend a sizing speed of about 50-250 m / min.

CONCLUSION

It is necessary to automate the sizing process, which will bring the following significant advantages:

1. The amount of waste produced in the body is reduced several times;
2. The breakage of warp yarns is reduced and the process of rewinding from warp coils to weaving coils is excluded.
3. The automated storage unit provides high economic and social benefits in the production of new structural fabrics

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