



SIMPLE METHODS FOR INCREASING THE PRODUCTIVITY IN A WORKSHOP OF TEXTILE GARMENTS

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Abstract: *This paper is based mainly on experience and is the result of optimization analysis of work operations in departments that make clothing products, with maximum 200 workers and financially unable to invest in expensive technical equipment. The analysis takes the problem of increasing productivity for some work operations, such as the operation of the realisation of loops, cutting them to the required size, forming packages, for their application to the top of the pants. The analysis performed was concerned not only with increasing productivity but also to create better working conditions for workers. Of course, through a thorough analysis can be improved and other working methods. Ergonomic workplace organization, centralization of operations or handling study due to their repetitiveness, can result in significant savings of time working. Equally it may affect the operations times for making garments and methods of employment with cut marks and accessories needed, or how to discharge processed workpiece. This paper outlines some options for improving the performance of companies producing textiles, in idea of increasing labor productivity and product quality. Even if a firm producing textiles, has sufficient financial resources for modern equipment, the studies conducted by experts, can brings improvements in working time and this without high costs.*

Key words: *loop, work operations, loop machines, screen printing, patterns*

1. INTRODUCTION

Of course, manufacturers have designed sewing machines that are getting more efficient, but at the same time becoming more expensive.[1-2]

The economic crisis led to the bankruptcy of a large number of textile factories, and in their place appeared little workshops that make clothing, with a small number of workers and poor technical equipment.

2. ANALYSIS OF THE OPERATION OF MAKING LOOPS

In this workshop an analysis was made to optimize work processes. The workshop is equipped classically, have 100 employees that manufacture about 400 sports pants and can not afford to make investments to buy modern machines with increased efficiency and low latency.

Among the analysed process steps and operations, was the realization of the loops, which has been submitted to the analysis due to delays in the supply of other operations. It was analyzed in detail, regarding the organization of the workplace, supply and exhaust system, performance of the machine that executed loops, and worker's rhythm of work. [3]

2.1. Existent situation

Work is being done on a trimming and loops making machine, with a coating seam and strengthening material inside.[4]

The orders of work are small and have many colors. The time scale was checked, taking into account the frequency of thread color or fabric guide changes.

After sewing a package of loops, the worker prepared for cutting them to the size required, putting a bandage on her fingers! The first conclusion about the delay in supply of loops was the worker discomfort caused by the prolonged handling of scissors, in a layered material.[5]



Fig.1: Trimming and loops making machine



Fig. 2: Driving device and the strip of reinforcement material

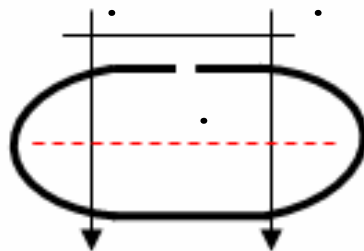


Fig. 3. Loop. Transversal section representation

2.2. The improved situation. Version 1

Without any additional investment, a sewing and trimming machine was set close the loops machine. After sewing the loops, they will be cut with this sewing machine (without needle), guided by different indicator points of cutting length. Evacuation of cut eyelets is done by sliding them into a collection box.[5]

Table 1. Comparative results

Work operation	EXISTENT SITUATION			IMPROVED SITUATION./ VERSION 1			Difference
	Average time type of operation performed for 60 loops (10 pants)	Average time for cutting with scissors and putting loops in packages	Total 1.	Average time of operation performed for 60 loops (10 pants)	Average time for cutting loops with the sewing machine.	Total 2.	
Trimming, making loops and putting them in packages.	1,65 min.	2,20 min.	3,85 min.	1,65 min.	1,20 min.	2,85 min.	1,00 min.

Result 1. TIME REDUCTION = 1,00 min / trouser

2.3. The improved situation. Version 2

The loops are applied on top of trousers, with a sewing and correction machine which will cut the bag pockets excess mterial.

At the top of the trousers will be projected through a slit, a bright light stripe marking where to find the free end of the loop. The worker receives the belt loops uncut. He fixes the end of the belt loops where the light indicates and fixes it at the top of the trousers, at the same time executing the cut of the loop. This process is repeated until all loops are fastened on the trousers. Belt loops are fed from a roll that was wrapped simultaneously with the execution of loops.[5]

Compared to Version 1, the average time for the cutting loops with cutting machine located in the vicinity of the machine that makes loops was eliminated, and also the time for packaging loops,

which according to situation no. 1. is 1.2 minutes, with cutting loops being realised during the fixing operation(coupling of operations).[5]

Table 2. Comparative results.

EXISTENT SITUATION				IMPROVED SITUATION./ VERSION 2		Difference
Work operation	Average time type of operation performed for 60 loops (10 pants)	Average time for cutting with scissors and putting loops in packages	Total 1.	Average time type of operation performed for 60 loops (10 pants)	Total 2.	
Trimming, making loops and putting them in packages	1,65 min.	2,20 min.	3,85 min.	1,65 min.	1,65 min.	2,20 min.

Result 2. TIME REDUCTION = 2,20 min . / trouser

3. ANALYSIS OF MARKING THE PLACE OF APPLIED POCKETS ON THE BACK OF PANTS

3.1. Current situation

The place of back pants pockets, is marked using cardboard auxiliary templates. These have the contour of pocket cut out, allowing it to be outlined with chalk. The template is positioned on the back of the trousers, matching the cuts/bytes with the bites of the back pant cut .[2,4]

Average time for marking the contour of pockets:

$$Nt = 0,50 \text{ min.} / 2 \text{ pocket .}$$

3.2. The improved situation

A screen printing with the outline of the shape of the pocket and perforated will be used. The screen is a hard surface, on which different shapes are cut. In the clothing industry, it is used to perform highly repetitive enrollments. Classical method consists in placing the screen above the fabric and spraying him with chalk dust. Chalk dust enters the perforations giving the textile material these contours.[5]

The improved situation will do the opposite. There is a need for a container which contains the powder of chalk, who is connected to compressed air and is covered with a fine screen, with the size of screen printing. The screen sits on the fine screen and is positioned according to the markers.

Over the screen sits the back of trousers, fabric face down, matching the nicks and positioning marks. At the push of a button, air drives the chalk dust through the screen. It enters through the perforation templates, marking simultaneously all around the pocket on the back of the trousers.

Results

After counting, the average time for marking the site of application of the two pockets is:

$$Nt = 0,20 \text{ min .}$$

Compared to the original method there is a reduction of 0,30 min / trouser .[5]

4. CONCLUSIONS

Even if the financial situation of the company does not allow investments, a careful analysis of phases of work, finding weaknesses and finding inexpensive solutions can increase production efficiency.

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