ANALYSIS OF CLASSICAL AND MODERN PRODUCTION LINE FOR PRODUCTION OF MALE DENIM JACKET

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Abstract

The aim of this paper is that based on the theoretical and practical research point to the possibility of raising the overall level of development and management process for designing clothes clothing from denim. The analysis of the differences and advantages of line with modern machines compared to traditional product line of men's denim jackets from the business and manufacturing system "Ramax". Application of modern machines than the classic way of making clothes allows you to: increase the volume of production and availability of data, shortening the time of production, increase quality standards of production, faster response to market trends, systematic organization of work, reduce costs and increase profit.

Keywords: manufacturing garment, modern production line, time of production

INTRODUCTION

In garment industry produces hundreds of different clothes to thousands of variants. Thanks to scientific and technical progress in this field have developed the most advanced technologies in the design process clothing jeans clothing. Today's level of modern technology in garment industry varies from sewing machines to microcomputers, and specialized sewing machines, automata, and second, the programmed microprocessor controlled sewing machines and robots, as well as the introduction computer system (CAD-CAM).

Last 30 years appears and contributes significantly to the development of electronic systems guided driving machines in the industry of clothing, with a number of automatic features, improved technical and a large number of additional devices. The appearance of micro-computers has enabled the connection of different production systems, the application of mechatronics and industrial robots. Immediately after the appearance of computers on the market started their application in business clothing manufacturer, after the operative preparation and production. Linking spatially distant computers, direct communication, using the same data, or their rapid transformation, connection with the preparation of the technical production process led to the emergence of the concept of CIM in manufacturing clothing. [1]

RESEARCH AND RESEARCH RESULTS

Today in the industrial production of garment use a large number of machines which differ in construction, degree of automation and use. Sewing men's denim jackets in the business of manufacturing system "Ramax" used the following machines:

- Common 755 Brother sewing machine has a sewing needle and uses two threads, upper and lower suture needle or thread

receiver. For the normal operation of sewing stitches flat granular (Type 301) and falls machine with a speed of 5000-6000 stitch/min.

- Special machines with edges stings BROTHER B551 is used for parts seaming apparel cases in order to prevent dropout of materials, as well as for assembling parts. This machine uses 3 or 5 seams, and one or two needles, so depending on the surface of the material received two stitches, edge flashings which parts of the seam, which compiles pieces of clothing. This machine has sewing speed of 7000 stitch/min.
- Special machinery company BROTHER used for packing clothing and parts with a knife, which has made cutting the excess material.
- Special machine with two needles BROTHER Company has two needles, two vertical receivers, two thread tension regulator; pedal a special shape, plate with two openings and a flat base plate. The distance between the needles from 1.6 to 70 mm and the length of penetration ranges up to 5 mm. Because of these characteristics is achieved have two parallel comparative points. Sewing Corner stitches this machine has a device for a needle off from work, while the material does not need to turn the corner, and then continue with two needles. Speed needle sewing machine of the 2800 to 3500 stitch/min and sewing flat granular Type 301 stitches
- Automatic sewing machines where all functions are performed automatically sewing, according to a preconceived program. The worker has the task to position the material, that the programmed parameters and include sewing machine. After sewing machine made the appropriate seam, stop with the needle in the pre-specified position, automatically cut off and postponed suture material.
- Controller for making pocket marked BASS 3100th.
- Controller for sewing company VI.BE.MAC pocket carries the factory label N in 2516.
- Controller for sewing label company VI.BE.MAC (Figure 4), marked 1010 V3 DLC.
- Controller for making "French" seam company VI.BE.MAC, marked 2261H.
- Controller for making the belt and cuff the firm VI.BE.MAC, marked 3022 CS
- Controller for making secure BROTHER Company used to consolidate and increase especially in places strained seams of pockets, eyelet, various openings, etc. It belongs to the short seams sewing automata. There are automata with 14, 21, and 42 stitches, and can be done to consolidate and increase neck seams that are longitudinal, transverse and circular.
- Controller for making hole GLOBAL Company, marked 770 or 778, in order to speed 2800-3500 rpm. Automatically feeds making holes, cutting holes and seaming chain stings, making secure and cutting threads.

Differences and advantages of line with modern machines compared to traditional production line will show the following analysis of the results obtained in experimental work.

Analysis was done and comparison of the following parameters:

1. Time making certain operations work.

2. Cost of certain operations work.

3. Number of pieces produced for the working time.

4. Production time of the denim jackets for men.

5. Cost of the denim jackets for men.

6. Saving labor.

1) Time of making certain operations of work

Table 1. Time of making

Operation of work	Time (s) in classical production line	Time (s) in modern production line
Making pockets on front part	660	194
Sewing pockets	220	34
Sewing labels	66	14
Sewing front pies	44	17
The composition of the shoulder stitches	52	16
The composition of the sleeve and side stitches	88	48
Making the belt	106	11
Making cuff	146	20

2) Cost of certain operations work

Table 2. Cost of certain operations work

Operation of work	classical production line (RSD)	modern production line (RSD)
Making pockets on front part	13,04	3,82
Sewing pockets	4,35	0,67
Sewing labels	1,30	0,27
Sewing front pies	0,87	0,33
The composition of the shoulder stitches	1,04	0,31
The composition of the sleeve and side stitches	1,74	0,94
Making the belt	2,10	0,22
Making cuff	2,88	0,40

Price development of certain operations of the modern line with significantly less compared with the line without the automatic machine.

3) Number of pieces

Table 3. Number of pieces for 26400 s

Operation of work	classical production line	modern production line
Sewing pockets	120	776
Sewing labels	400	1886
Sewing front pies	600	1553
The composition of the shoulder stitches	507	1650
The composition of the sleeve and side stitches	300	550
Making the belt	249	1400
Making cuff	146	1320

4) Production time of the denim jackets for men

Table 4. Production time of the denim jackets for men

Number jacket	1	100	250
Time (s) in classical production line	5060	506000	1265000
Time (s) in modern production line	3231	323100	807750

5) Cost of the denim jackets for men

Table 5. Cost of the denim jackets for men

Number jacket	1	100	250
Cost in classical production line	93,80	9380	23450
Cost in modern production line	60,59	6059	15147,5

6) Saving labor

Table 6. Number of workers

Number of work days	1	10	20	23
Workers for classical production line	48	480	960	1104
Workers for modern production line	30	300	600	690

The technological process of production of men's jeans line need 48 workers for a classical production line and 30 workers in modern production line which means 18 employees less.

For the same volume of production of the required number of employees for 23 working days in line with the slot 690 workers on the line without the machine workers in 1104, which are 414 workers are more. Saving labor is large in line with slot.

CONCLUSION

The existence of integrated CAD/CAM system in a CIM concept is achieved by increasing the quality of up to six times the reliability of manufacturing operations to 75%, cost reduction, etc.. The research confirmed that the following advantages of applying modern machine compared to the traditional way of making clothes:

- Increase the physical volume of production,
- Shortens the time of production,
- Increase quality standards of production,
- Can quickly react to market trends,
- Increased availability of data,
- Organization of work is systematic and fast,
- Reduce costs and grow profits.

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