INFLUENCE OF DIFFERENT SIZE AND TYPE OF FABRIC ON THE CUT MARKER UTILIZATION OF MEN'S JACKET

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Abstract: *The aim of this paper is computer construction, modeling, and grading of cut pieces of a men's jacket, as well as to see the influence of different sizes and types of material (stripe and plaid) on the creation of markers for men's jacket. The emphasis is made on making several cut markers for a different type of fabric, to see the difference between the utilization of material during cutting, depending on the fabric design as well as different sizes. In practice, it is difficult to make a cut marker that will contain stripes or plaid. The reason is that these fabrics obtained by weaving do not have an ideal appearance. That is why a marker for fabric without a pattern is made, and then the fitting cut pieces to the designed materials are done manually. The obtained results lead to the conclusion that the different sizes and the type of material have a large influence on the utilization of cut marker and consumption of textile materials. It can be assumed that the CAD application provides the fastest and most efficient solutions to the problems that arise during the preparation of the model for production.*

Key words: men's jacket, construction, cut marker, marker utilization.

UTICAJ RAZLIČITIH VELIČINA I VRSTE TKANINA NA ISKORIŠĆENJE KROJNE SLIKE ZA MUŠKI SAKO

Ključne reči: *Cilj ovog rada je kompjuterska konstrukcija, modelovanje i gradiranje krojnih delova muškog sakoa, kao i sagledavanje uticaja različitih veličina i vrsta materijala (štrafta i karo) na stvaranje krojne slike za muški sako. Akcenat je dat na pravljenju nekoliko krojnih slika za različite vrste tkanina, kako bi se videla razlika između iskorišćenja materijala za vreme krojenja, u zavisnosti od dizajna tkanine kao i različitih veličina. U praksi je teško napraviti krojnu sliku koja sadrži štrafte ili karo. Razlog za to je što ove tkanine dobijene tkanjem nemaju idealan izgled. Zato se izrađuje krojna slika za tkaninu bez šare, a zatim se uklapanje krojnih delova na dizajnirane materijale vrši ručno. Dobijeni rezultati dovode do zaključka da različite veličine i vrsta materijala imaju veliki uticaj na iskorišćenje i potrošnju tekstilnih materijala. Može se zaključiti da CAD aplikacija pruža najbrža i najefikasnija rešenja problema koji nastaju tokom pripreme modela za proizvodnju.*

Keywords: muški sako, konstrukcija, krojna slika, iskorišćenje krojne slike.

1. INTRODUCTION

Fabric characteristics that affect utilization include differences in face and back, lengthwise directionality, crosswise symmetry, need for matching the fabric design, length of design repeat, and fabric width. These fabric characteristics frequently limit the arrangement of pattern pieces. Matching fabric designs requires special marker preparation and extra

piece goods. Stripe or plaid lines must be indicated on pattern pieces and markers for accurate alignment and matching to corresponding pieces. The greater the length between repeats increases the potential for fabric waste. In order to reduce the cost of cutting the order, there must be a plan for arranged pattern pieces on the top of the fabric layout [1]. Firms often establish fabric utilization standards. Firms producing

basics may strive for 90 to 97 percent utilization, while fashion-firms may be able to achieve only 80 to 85 percent. It is important for firms to document material utilization and variances from the standards to monitor improvements or factors that impact the utilization. Better utilization is normally developed for basic styles because optimum fabric widths are used consistently and more time invested in cut planning and manipulating pattern pieces in the markers to reduce waste of materials. Markers for basic styles are used to cut large volumes of piece goods and may be kept on file and used repeatedly; thus, the time invested in improving utilization results in greater savings. Markers for fashion styles and Quick Response strategies may be used only once or for a limited number of spreads and few plies. Fashion garments are subject to constant changes in styling and materials and tight deadlines that limit the time available to develop efficient markers [1].

The task of the arranged material process is to arrange the requirements of the apparel order, taking into account the length of the cut marker and the required fabric patterns, to arrange the required number of layers of fabric specifically one above the other in length and width without tension. To this end, Jacobs-Blecha *et al.* [2] developed a mathematical model and analyzed the problem. On the basis of this analysis, solution approaches are developed that have been implemented on a desktop PC-based computer. Validated on representative industry problems, the approach is shown to be effective and versatile. Jacobs-Blecha, and Riall, [3] focused on three areas: assessment of the state of the art in marker-making software, literature search, tailoring problems analysis and its application to marker-making problems and also solving marker-making problems. Conclusions and recommendations are presented in their study. The utilization of textile materials is determined by the planning, spreading and cutting processes in the cutting department [4]. Antic *et al.* [5] present the computer method of pattern cutting images fitting using CAD system of construction preparation in clothing industry based on defined parameters in man's jacket making. Žežova *et al.* [6] examined the effect that type and width of markers on have on the consumption and utilization of textile materials, two variants of work orders, which differ in their structure and type of clothing product. The obtained result leads to the conclusion that the type of marker and the type of garment have a large influence on the utilization and consumption of textile materials. Jankoska and Petreska [7] to make a computer construction, modeling,

grading and make marker and fabrication test model plated corset from a technical sketch.

The aim of this paper is to make a computer construction, modeling and grading the men's jacket and markers making as well as and the impact of different sizes and types of materials on marker utilization.

2. EXPERIMENTAL PART

The purpose of drafting a jacket foundation, which includes a tailored two-piece sleeve, is to have a base from which many jacket panel designs are created. The front and back are drafted together and are not separated for pattern work. The foundation is a plain box silhouette, without style lines, and with room enough for 1,5 cm shoulder pads. Figure 1 shows a technical sketch of the men jacket model from which the computer construction of base size, modeling the back, grading, and making markers with different sizes and different types of fabric. The model description is the three-button-style jacket has a semi-notch collar, a welt, and two flap pockets and chest welt pocket. The back is made up of four parts and a two-piece sleeve.

Figure 1: Technical sketch of men's jacket

3. RESULTS AND DISCUSSION

3.1. Computer construction on the basic pattern of the men's jacket

The construction of a basic pattern of the jacket is made on base main measures and pre-calculated necessary measures with additions for comfort for size 50, [8]. The main measures are shown in Table 1.

Table 1: Main measures for size 50 of men’s jacket

Main measures	
Body height	172 cm
Chest	100 cm
Weist	92 cm
Hip	106 cm

Figure 2 shows the computer construction of the basic pattern of the jacket, sleeve, and collar. The necessary functions were used to construct an appropriate computer program AccuMark-Gerber Technology. After construction and modeling of the back, trace the cut pieces and added allowance seams to each of them. The seam allowances are 1 cm and for the hem is 3 cm, shown in Figure 3.

Figure 2: Construction on the basic pattern of the men’s jacket

Figure 3: Completion of cut parts with a seam allowance of men’s jacket

Figure 4: Grading sizes 48-54 of basic materials of men's jacket

For the production of men's jackets following cut parts are required:

- 2x front parts
- 2x side parts
- 4x back parts
- 2x upper sleeve parts
- 2x under sleeve parts
- 2x collar
- 2x flap pocket
- 1x chest welt pocket.

3.2. Grading sizes of men's jacket

Figure 4 shows a grading on the basic material of a men's jacket. Computer grading is made on four sizes 48, 50, 52 and 54, where the size 50 is basic size. Construction is done according to certain baselines that are common to all sizes, one horizontal and one vertical line on the cutting section that does not change from size to size.

3.3. Preparation of cut parts to make marker for stripe and plaid fabric

Figure 6 shown preparation of cutting parts to making marker for stripe and plaid fabric. If the jacket is to be made of other material, i.e. if the jacket is to be made of stripe or plaid, additional adjustments to points and lines shall be made on the segments where the stripe or plaid need to be overlap. This

should be done on each tailpiece of the jacket needed for tailoring, especially on the left and the right jacket ends, which is not the case when the material is without patterns. The necessary corrections are given in Figure 5. An additional table that is required to make a strip and plaid marker in addition to other tables is the Matching Table.

3.4. Making markers with different size and different type of fabric

Making markers for all sizes 48, 50, 52 and 54 are given in Figure 6. The width of the materials is 140 cm.

From the markers shown, it can be seen that the markers are made of the same size twice fitted or two sizes cut marker (markers that have two sizes that are absolutely the same, eg 48-48, 50-50, 52-52 and 54-54) only in reverse direction placed in the marker. The results obtained show that a marker having a size 48 has utilization of 76.25 %, a marker with a size of 50 has 79.79 %, a marker with a size of 52 has 81.49 % and a marker with a size of 54 has 82.42 % utilization of non-pattern material. It can be concluded that the marker containing the largest size 54 fit has the highest material utilization of 82.42 % which is 8% higher than the smallest utilization having the size 48 of 76, 25 %. The base size 50 is 4.6 % more utilization than the smallest size 48, and less than 3.3 % larger than the largest size 54. It can also be concluded that the cut marker utilization increases with higher size.

Figure 7 shows cut markers for sizes 48, 50, 52 and 54 for a 2.5 cm striped fabric for a men's jacket. From

Figure 5: Preparation of cut parts to make marker for stripe and plaid fabric

the markers shown, it can be seen that the markers are made of two sizes cut marker (markers that have two sizes that are absolutely the same, eg 48-48, 50-50, 52-52 and 54-54) only in reverse direction placed in the marker. The results show that size 48 has 75.64 % utilization, size 50 has 76.58 %, size 52 has 77.28 % and size 54 has 77.89 % utilization. It can be concluded that size 48 has the lowest utilization and size 54 has the highest utilization, that is, size 54 has 3 % greater utilization than size 48. Basic size 50 has 1.2 % higher utilization than the smallest size of 48 and 1.7 % less utilization relative to the largest size. It can also be concluded that the cut marker utilization increases with higher size.

Figure 8 shows cut markers for sizes 48, 50, 52 and 54 for plaid fabric 1.5x3 cm for men's jacket. The results show that size 48 has 75.52 % utilization, size 50 has 75.90 %, size 52 has 76.92 % and size 54 has 77.78 % utilization. It can be concluded that size 48 has the lowest utilization and size 54 has the highest utilization, that is, size 54 has 3 % greater utilization than size 48. Basic size 50 has 0.5 % higher utilization than the smallest size and 2.5 % less utilization relative to the largest size. It can also be concluded that the utilization of the cut marker increases with higher size. From the markers shown, it can be seen that the markers are made of two sizes cut marker (markers that have two sizes that are absolutely the same, eg 48-48, 50-50, 52-52 and 54-54) only in reverse direction placed in the marker.

4. CONCLUSION

In this paper, computer design, modeling, and grading of men's jacket were made, and cut markers were then made to see the effect of different sizes and different types of fabrics on the utilization of the cut marker. The results show that when making cut markers of different sizes by two of the same size in one marker, utilization is higher at larger size and opposite. From the obtained results, it can be concluded that when fitting parts for non-patterned material, the cut marker has the highest utilization (76.25 - 82.42 %) compared to cut markers with different fabric type, namely: for strips 2.5 cm (75.64 - 77.89 %) and plaid 1.5x3 cm (75.52 - 77.78 %). It can also be concluded that the smallest size 48 has the least utilization, and the largest size 54 has the highest utilization in both three cases.

Computer making cut marker for non-patterned materials is very fast, efficient and accurate, however, only this method of fitting is used in practice, because parts of fabric such as plaid and strip are difficult to integrate with the computer due to the not ideal appearance of the material when weaving. Similarly, additional markers should be made before the creation of such markers and such sections should be arranged so that certain points on the joining pieces are in the same position to form a report for stripe and plaid. In this paper, this is demonstrated and can be used on such fabrics and gives much faster but also great op-

Figure 6: Making marker for size 48, 50, 52, 54 of basic material without pattern for men`s jacket

Figure 7: Making marker for size 48, 50, 52, 54 of stripe 2,5 cm fabric for men`s jacket

Figure 8: Making marker for size 48, 50, 52, 54 of plaid 1,5x3 cm fabric for men's jacket

erator convenience, only if the fabrics are ideally woven the entire length. Otherwise, markers would be made for non-pattern fabrics, after which they would cut the cut part from the marker and place it on the material manually to obtain the desired for stripe and plaid.

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