ANALYSIS OF TECHNOLOGICAL PROPERTIES OF JACKET POCKETS

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INTRODUCTION

The pockets are designed mainly for functional and aesthetic purposes without **discussing their construction complexity and ergonomics properties.**

The duration of sewing operations depends on textile parameters such as thickness and friction [1], construction of clothing elements [2], workplace ergonomics [3], organization of the sewing process [3], etc. Thus, the precise determination of the duration of the operation is gaining more and more attention [4]. For the optimal construction of a particular garment element concerning its technology, the smallest number of textile pieces, technological operations, technological devices, and shortest treatment duration are required. Thus, this research **aimed** to investigate the influence of jacket pocket construction on its technological properties and to suggest the optimal pocket construction, based on the number of details, demand of materials and threads, and sewing time.

EXPERIMENTAL DETAILS

The schemes of the analyzed pockets are shown in Figure 1.
The efficiency of pocket technology is evaluated according to:

1) the number of pocket pieces;
2) the type and demand of different materials;
3) the number of elementary sewing operations;
4) the time of pocket sewing, s;
5) the thread consumption L calculated analytically for the seam of 301 stitch: $L=2l(1+Khm)$, where l – the length of sewn seam, cm; K – the coefficient of compression of the material (0.7); h – the average thickness of the materials in a seam, mm; m – the stitch density in a seam, stitches/cm.

The parameters of the welt pockets with flaps:

- the length of the opening – 15 cm;
- the width of the flap – 5 cm;
- the bag depth – 18 cm;
- the width of the pocket inside piece – 6 cm;
- the width of the (folded) edging is 0.6 cm.

The materials:

- F01 woven fabric: 54 % PES, 44 % wool, 2 % EL; 185 g/m^2 area density; 0.39 mm thickness;
- F02 lining: 100 % viscose 72 g/m^2 area density; 0.12 mm thickness;
- F03 nonwoven fussed interlining: 100 % PES; 0.33 mm thickness; 100 % PA adhesive layer; 76 dots/cm^2 density.

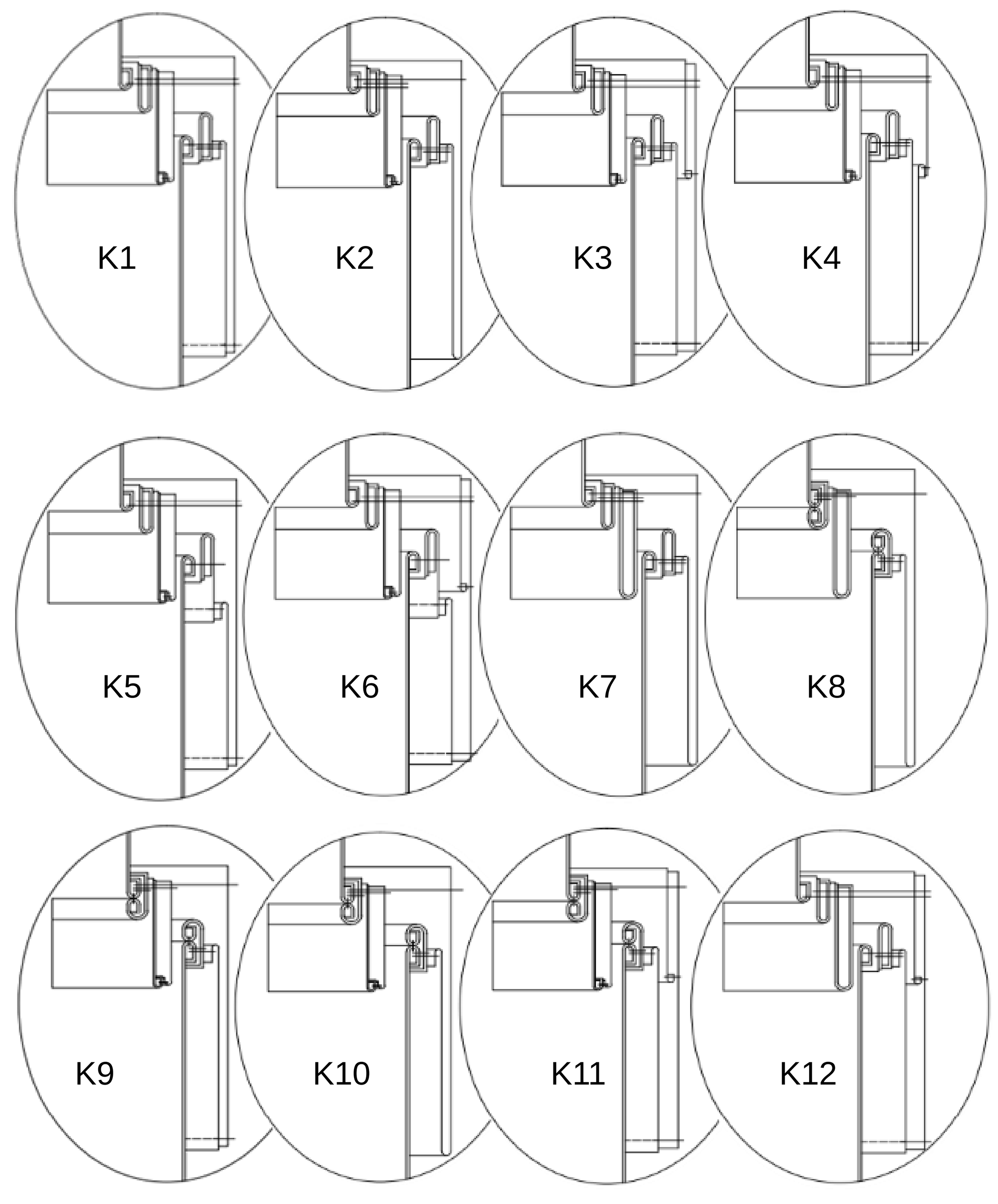

Fig. 1 Schemes of the welt pockets with flaps

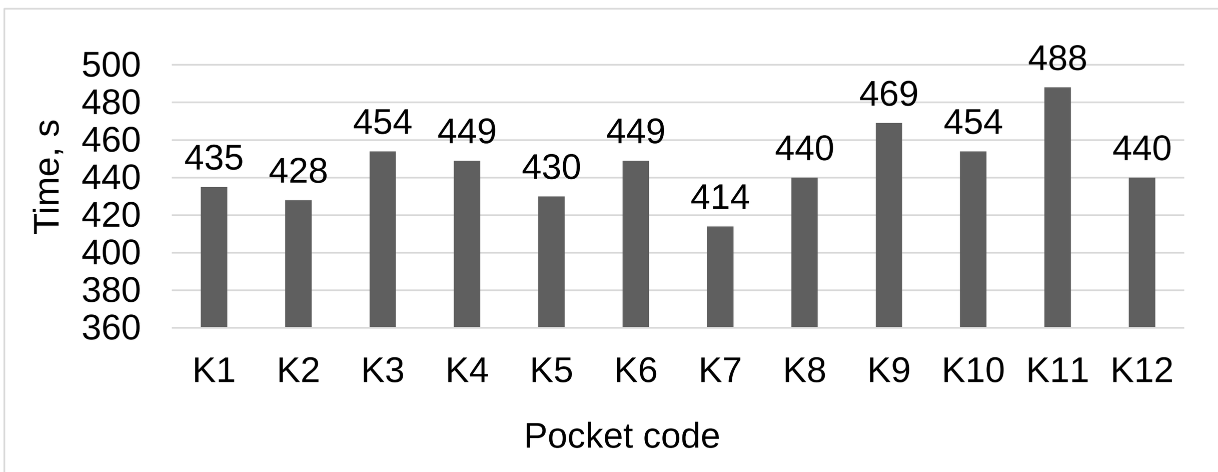

Fig. 4 Time used to sew the pockets

RESULTS AND DISCUSSION

The pieces of the pockets were designed according to the measurements known from theory and practice (Fig. 2.) The lowest quantity of fabric pieces is required for the design of K7 and K8 pockets and the highest for the design of K3, K4, K6, and K10 pockets.

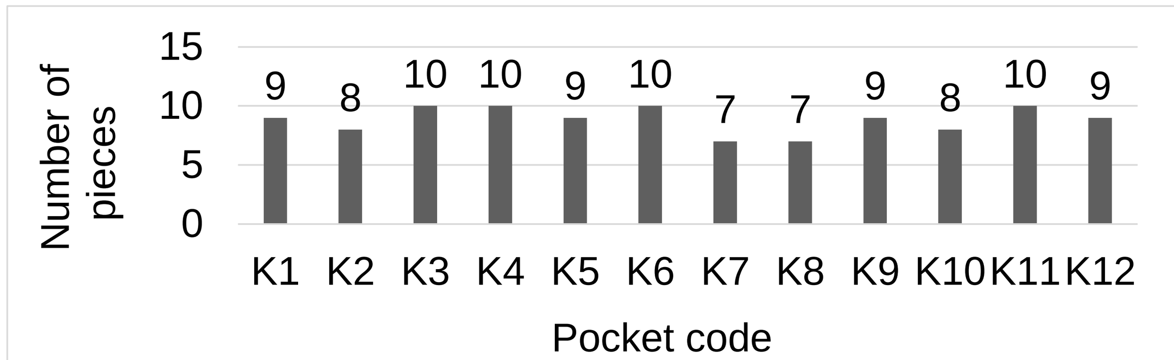

Fig. 2 Number of fabric pieces required to sew each pocket

The number of elementary operations (Table 1) of the K1 and K5 pockets are the smallest – 13 operations. The sequence of operations for the K11 pocket is the longest; it consists of 17 elementary operations.

Table 1 Summary of number of the sewing operations

Pocket type	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12
Number	13	14	14	14	13	14	14	16	16	16	17	14

The K7 pocket is the most time efficient (Fig. 4). The longest manufacturing duration is for the K11 pocket due to the largest number of pocket pieces and the technological operations required to join them.

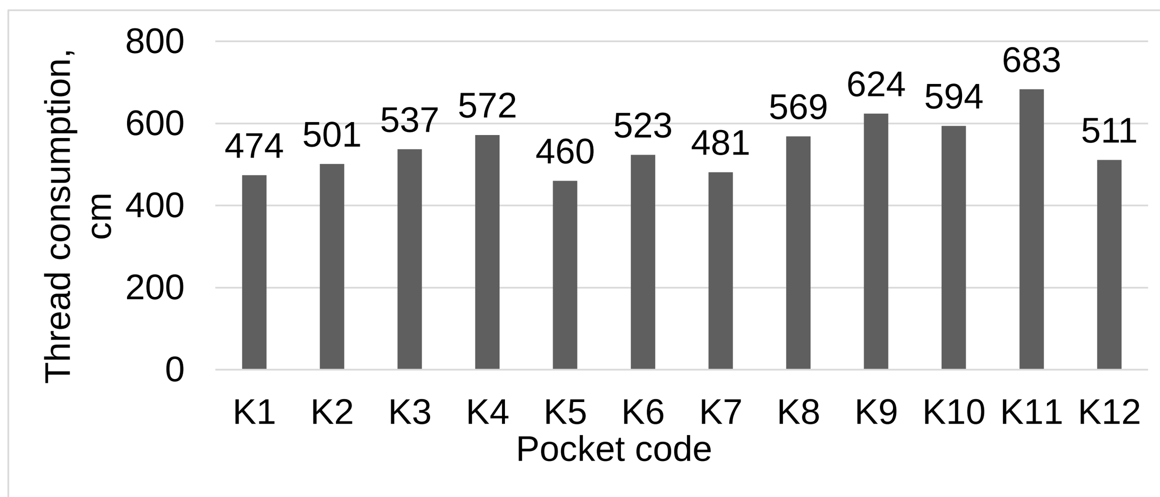

Fig. 5 The consumption of the thread used to sew the pockets

The lowest thread consumption is required for the K5 pocket and the highest for the K11 pocket (Fig. 5).

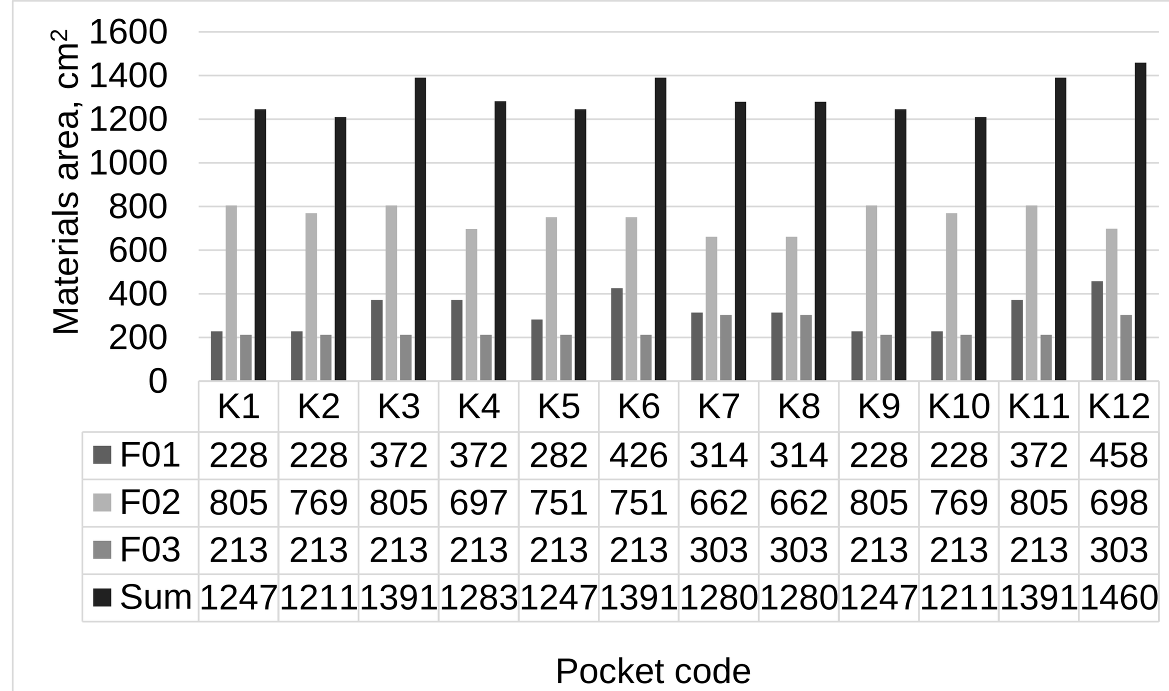

Fig. 3 Material consumption for each type of pocket

The demand for the main woven fabric (F01) is not quite similar (Fig. 3), for the K6 and K12 pockets the consumption of this material is the highest. The minimum consumption of lining fabric (F02) is for the K7 and K8 pockets and the maximum for the K1, K3, K9, and K11 variants. The consumption of the adhesive interlining is evenly distributed among all pockets, in exception of K7, K8, and K12 pockets. It was determined that the minimum consumption of the materials is required for the production of K2 and K10 pockets. The production of K3, K6, K11, and K12 pockets requires the highest material demand.

CONCLUSIONS

1. During the research, 12 welt pockets with flaps were analyzed to evaluate their technological properties.
2. The study suggests that the complexity of pocket design determines pocket manufacturing technology and the efficiency of the time and material required for pocket manufacturing.
3. After reviewing all the results obtained, it is quite difficult to choose the most efficient pocket because of not evenly distributed results with respect to the evaluated parameters. In terms of the materials consumption, the K2 pocket is optimal, in terms of the thread consumption, the K5 pocket, and in terms of the processing time, the K7 pocket. The least efficient is the K11 pocket due to the largest number of pieces, the longest sequence of technological operations, the longest pocket manufacturing time and the highest material and thread consumption.
4. Assuming that the pieces of the pockets in the marker can be placed between the main pieces of the jacket and taking into account the obtained research results, it can be stated that the K7 pocket is the most efficient.

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