Development technology of moon bag process template for knitted sports pants

Xue-Feng Yin, Lu-Ni, Ju-Fen Fu
Applied Technology College of Soochow University, Suzhou, Jiangsu, 215325, China
email: yinxuefeng@suda.edu.cn

Abstract. Clothing technology template is a special auxiliary clothing production tool, and it is a new mode of clothing production. The development of garment template technology is more and more extensive, but it is less used in knitted garments. Based on the theory of garment process template, this paper takes the moon bag of knitted sports pants as the research object, and uses jingwei garment template professional software to design its template, then cuts and assembles the template, so as to solve the demand of garment enterprises for high-quality products and high-tech personnel.

1. Introduction
Garment template technology is an advanced production process, which is a professional hand-made mold for making clothes. It is mainly used for sewing, ironing, positioning and other processes. Garment template technology has become one of the new technologies widely used in garment industry because of its simple use, convenient sewing, simplified production process, reduced operation difficulty and improved product quality \[1\]. By designing the garment process template and arranging the template process, the finished products can be standardized, stylized and homogenized, the sewing efficiency can be improved, and the sewing operation can be simplified \[2-3\].

The template technology realizes sewing according to the template track, changes the previous process operation mode, improves the production efficiency of the enterprise, reduces the demand for manual technology, and promotes standardization, mobility and modern production workshop.

Garment process template technology studies the law of technology transformation in the process of garment processing, and uses computer-aided design (CAD) technology to make fixed patterns and related auxiliary tools to replace or simplify the traditional sewing process. With the development of technology and people's in-depth understanding of garment technology, the scope of garment production technology has been broadened by garment template technology. At present, the template is widely used in woven clothing \[4-6\], but less used in knitted clothing. In this paper, the moon bag of sports pants is taken as an example to develop the template.

2. Development of moon bag template
2.1. Design principle analysis
The moon bag includes pocket cloth on the back of the hand, pocket cloth on the palm, zipper, etc. The pattern of moon bag pants is shown in Figure 1. The traditional process needs positioning, ironing and other steps. This method consumes a lot of man hours and power resources, so it is necessary to improve it.
The moon bag template can simplify the sewing process and better solve the positioning problem. The panel sewing position is hollowed out, and the top zipper head is hollowed out, which makes the sewing more comfortable. In addition to the design of the slotted zipper track on the middle plate, the size of the zipper head needs to be excavated at the top. Both ends of the slot shall be pasted with PVC glue board at the corresponding hollow position to ensure that the four layers of templates are in a bonding state when they are together, so as to facilitate sewing. The slot width is set to 3mm.

Step 1: add seams. Select the clean sample line of the garment piece, and use the [parallel line] tool to add 1cm seam on the side pocket pattern.

Step 2: set the slotting line. First, delete the body clean sample line, and delete the excess body wool sample line, leaving only the body wool sample size including the front piece. Set slotting line according to the stitching position, use No. 2 pen for knife.

Step 3: add frame and fillet. Use the [outline] tool to add an outline to the side pocket. The distance from the top is set to 40mm, and the distance from the left is set to 30mm. Delete excess wool lines. At the same time, the pen number of the knife is set to 3, and the four corners are rounded to facilitate operation. Click OK for template 1. As shown in Figure 2. Copy the template 1, delete the bag line to get the middle plate 1 template, delete the trouser line of the original template 1 to get the final bottom plate, delete the trouser line and envelope to get the middle plate 2 template, and delete the zipper slot to get the panel. The panel, middle plate 1, middle plate 2 and bottom plate are shown in Figure 3. The order of each layer of formwork from top to bottom is panel, middle plate 1, middle plate 2 and bottom plate.
2.2. making of moon bag template

Step 1: select the appropriate thickness of the template material. The moon bag template needs four layers. Two kinds of thickness of formwork are required, 1.5mm and 0.5mm respectively.

Step 2: cut the template. The first layer and the fourth layer are cut with 1.5mm thick template, and the two middle templates are cut with 0.5mm thick template.

Step 3: check the template.

Step 4: paste the template. The procedure is the same as the side pocket.

Step 5: paste the frosting strip and sponge strip. As shown in Figure 4.

Figure 3 Moon bag template (2)

Figure 4 Moon bag template product
3. Application of moon bag process template

3.1. Garment template sewing machine

The application of garment process template needs to use template sewing machine for operation. With the rise of garment process template, all kinds of garment template sewing machines are constantly developed.

(1) Simple refitting template sewing machine

The simple refitting template sewing machine is formed by refitting the corresponding cableway roller type presser foot, needle plate, teeth, etc. on the basis of the ordinary sewing machine, as shown in Figure 5. This kind of template sewing machine is operated by hand, but due to the limitation of the common sewing machine, it can only operate the pocket, collar and other local clothing processes.

(2) Long arm template sewing machine

The long arm template sewing machine is shown in Figure 11. Compared with the ordinary sewing machine, it has a longer arm, so it can operate the process of larger parts. Because the table is high, generally standing manual operation when use it.
3.2. application effect of moon bag process template

Due to the small part of the thread embedding bag, the simple modified template sewing machine or the long arm template sewing machine can be used for operation. The operator only needs to hold the process template and put it into the template sewing machine to sew along the slotting track of the template. The specific practical effect is consistent with the traditional sewing effect. In addition, because the template process is not affected by the proficiency of the operator, the timeliness is also significantly improved.

4. Conclusion

The process template of moon bag is a pocket sewing tool in garment processing, which can accurately locate the sewing position of the pocket through the slotting track of the template, so that the process can be standardized on the basis of not relying on the skilled degree of Turner, improve the production efficiency, optimize the sewing process, make the garment production line more smooth. Also it can reduce the difficulty of clothing technology, solve the technical bottleneck of workers, get rid of the dependence on skilled workers, reduce costs and improve the competitiveness of enterprises.

References

[1] Wu Yujun, Liao Mingjie. Research on application and development of garment template technology [J]. Shandong Textile Science and technology, 2014 (3): 33-37

[2] Sun Yufang, Zhang Shengping, Yungling. Design and production of garment process template [J]. Textile guide, 2014 (7): 119-120

[3] Li Peng, Zhang Peisi, Zhang Zhibin. Application of intelligent template technology in production line optimization of traditional garment enterprises[J]. Shanghai textile technology, 2018,6 (46): 22-24,34

[4] Jiang Cheng. Research of clothing patch pocket based on non-ironing template technology[J], Advanced Materials Research, 2014:1048:224-227

[5] Sun Yufang, Wu Hongfang, Chen Yuhuan. Template Design of Suit Attaching Sleeve Technology[J], Advanced Materials Research, 2014:1048:240-244

[6] Zhang man. Research on men's jacket sewing process based on garment template technology[D]. Suzhou University, 2019