



IMPROVING THE AESTHETIC ASPECT OF A KNITTED PRODUCT FOR WOMEN

BOHM Gabriella¹, ŞUTEU Marius Darius¹, DOBLE Liliana¹, ALBU Adina¹

¹University of Oradea, Faculty of Energy Engineering and Industrial Management, Department Textiles, Leather and Industrial Management, 410058, Oradea, România, E-Mail: bohmgaby@gmail.com

Corresponding author: Gabriella, BOHM, E-mail: bohmgaby@gmail.com

Abstract: *These days fashion is in a continuous advancement and the producers are looking to adapt to the needs of the market. Due to this tendency they resort to different techniques and procedures for making, finishing and decorating the clothing products. In this sense, computerized graphical programs can be used to increase productivity and improve the quality and design of the products made. This paper comes as a response to these needs, completing the knitting process of a clothing product with embroidery techniques. The product is represented by a woman's knitted jacket, made in 2:2 lincs structure cred ca așa e, being a knitwear with three-dimensional effect. The chosen yarn is 50% wool, 50% acrylic, fineness 2/25. The product presented in this work was made on the SES 122FF flat knitting machine, the fineness 8 E. This is a machine with electronic control and selection, with two knitting systems and a useful width of 90" (229 cm). The machine is fitted with a presser foot with two systems of integrated cams. The DSCS device (patented by Shima Seiki). These knitting machines use the knitting programs, the SDS-One graphics station or the latest generation APEX graphics station. After the product has been completed, the embroidering step has been finished. This stage highlights the degree of difficulty of embroidery on a three-dimensional knit.*

Key words: *Knit, embroidery, knitting design, programming.*

1. INTRODUCTION

Nowadays fashion is in a continuous ascension and the producers are looking to adapt to the needs of the market. Because of this tendency specialits in this domain resort to different techniques and procedures for making, finishing and decorating the clothing products. In this way, computerized graphical programs can be used to increase productivity and improve the quality and design of products made [1]. This paper comes as a response to these requirements, finishing the knitting process of a clothing product with embroidery techniques.

The product is a woman's knitted jacket, made in 2:2 lincs structure, being a knitwear with three-dimensional effect. The chosen yarn is a 50% wool, 50% acrylic, 2/25 fineness, which harmoniously blends the hygienic-functional and comfort features that is so demanded from a knitted product and a high processability due to the acrylic component. Since high quality raw material has a high cost, contoured panels are made to minimize raw material losses.

To achieve a certain level of quality of the knitted product, it is necessary to correlate the knitting technological parameters with the raw material processed on the machine, the structure obtained, and the parameters of the structure, the physico-mechanical and hygienic-functional characteristics of the knits [2], [3].

2. THE EXPERIMENTAL PART

The product presented is made on the SES 122FF knitting machine, fineness 8 E, produced by Shima Seiki in Japan, in the S.C. CONFECTOR S.R.L. Santana. This is a sewing machine with controls and electronic selection with two knitting systems and a multipurpose width of 90" (229 cm). The machine is fitted with a presser foot with two systems of integrated cams. The DSCS device (patented by Shima Seiki) is the most important improvement in the knitting technology on the rectilinear machine. The device controls and adjusts the length of the yarns that is used digitally, keeping it constant, with a tolerance of $\pm 2\%$. This device is essential for contour knitting and integral knitting, so that it keeps the knit dimensions constant.

These knitting machines use for completing the knitting programs, the graphics station SDS-One or the latest generation APEX graphics station (Figure 1).

Operation is done on a single monitor, using the digitizer tablet format A4, the trackball, and the keyboard with 104 keys. Both hands can be used for efficient operation.

Programming on this station is done using graphical conventions called color codes.

In order to get a knit on the flat machines equipped with the PC command one must go through the following steps:

- knitting design - structure, printing, design, etc
- designing the knitting program
- processing – translating the program for the knitting machine language
- making adjustments to the knitting machine
- performing knitting on the knitting machine

Programming the Knitting Machine

In order to get a knit with a desired structure and shape according to the specified knitwear parameters, this means adjusting the following parameters:

- working speed;
- thickness of knit material;
- the pulling force.
- planning the production
- delivery of products.



Fig. 1. Station SDSOne–Shima Seiki

After making the design drawing of the knit – the design and the pattern, the design of the knitting program is carried out in order to create the contoured panels (adjustments on the body decreases, increases - the armhole, sleeve and the collar neckline respectively)

The next step is the shift to development and processing - that is, the translation of the computer program for computer knitting machines language. The following figures show the right front, left, back, sleeves, collar parts on different stages (Figure 2; 3; 4; 5.)

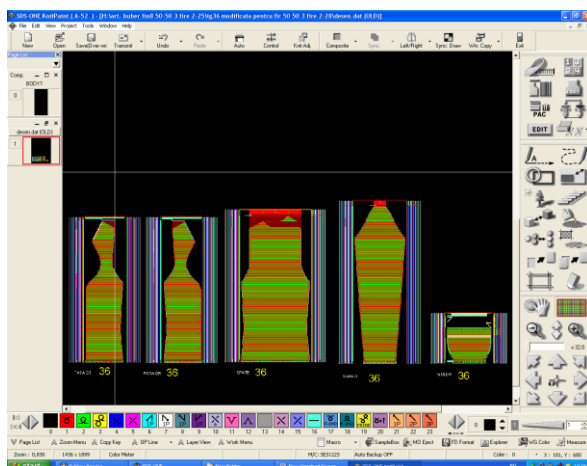


Fig. 2. Highlights: Right front, left front, back, sleeves, collar

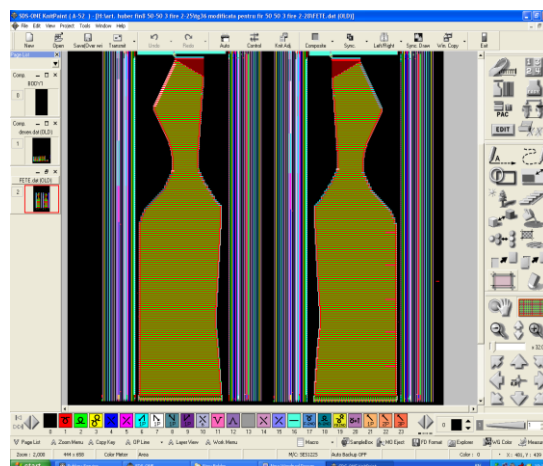


Fig. 3. Highlights: Right front

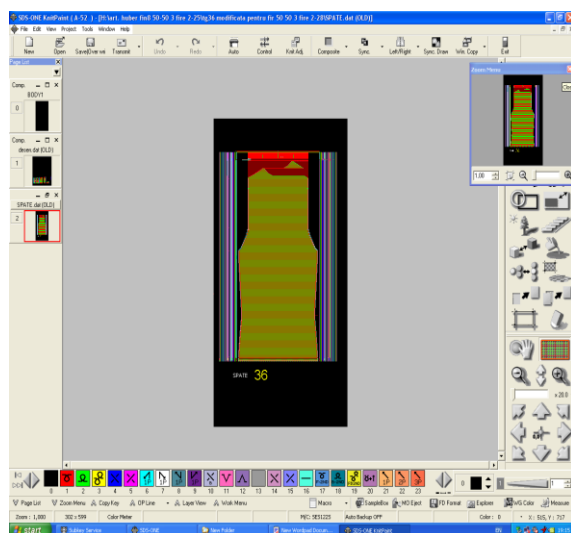


Fig. 4. Highlights: front back

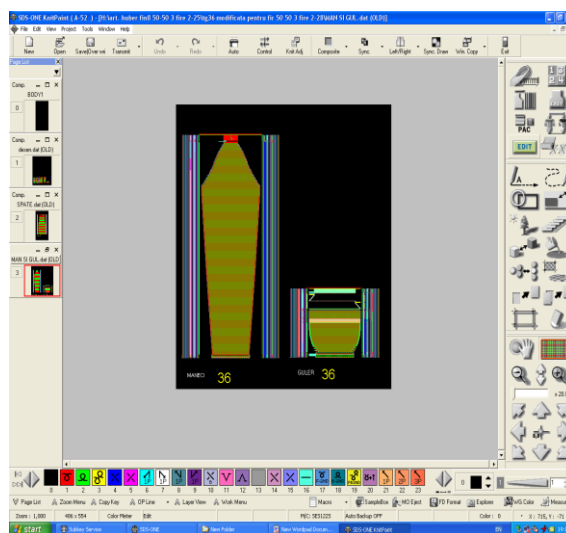


Fig. 5. Highlights: sleeves, collar

A very important step is the operation of the knitting machine settings:

- knit thickness
- pulling force
- working speed
- arranging the yarn feeders according to the edge of the fabric (Figure 6)

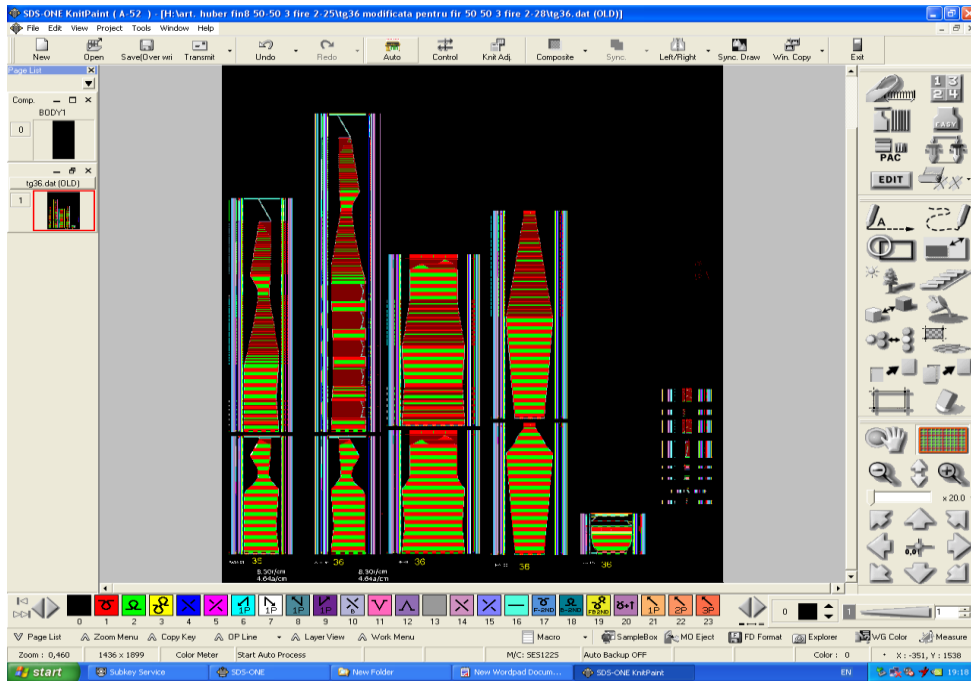


Fig. 6. Processing the designed drawing, and transformed into the computer language of the knitting machine

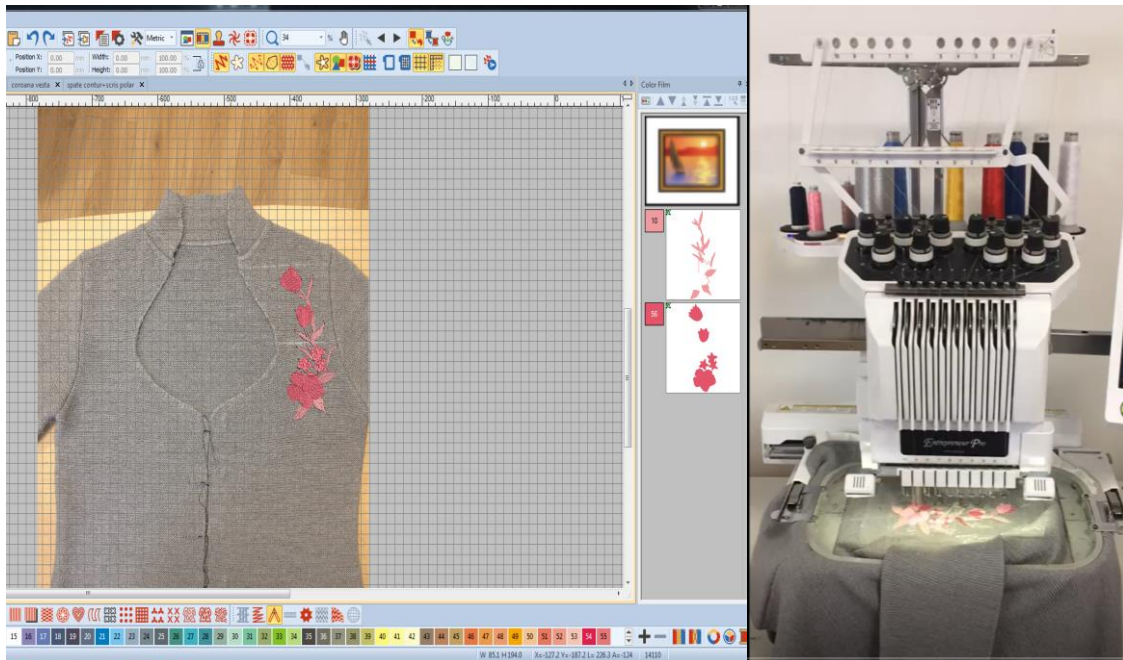


Fig. 7. Embroidery [4], [5], [6]

In order to meet the demands of fashion which is in permanent change, a simple embroidery is added to the product to improve the look of the product and to fit it into a family of models or to reinterpret a model in a new style.

The embroidery was carried out using the Happy embroidery machine at S.C. CONFIDEX S.R.L Oradea. The embroidered pattern was made using the BERNINA Embroidery Software Designer Plus software (Figure 7) [7].



Fig. 8. Final product



Fig. 9. Final effect embroidery

3. CONCLUSIONS

We want to conclude by saying that using computers and performing knitting machines in this case has a lot of advantages. First and foremost, expenses and time are greatly reduced due to the possibility of making contoured panels, thus reducing manufacturing times and raw material losses, and computer graphics programs are used to increase productivity, improve quality and the design of the product executed. In this way, manufacturers employing these techniques and modern



machines manage to be always trendy and efficient.

As a comparison of embroidery on a three-dimensional knit, we want to emphasize that it is much harder to apply it compared to a fabric or a bidimensional knit. This difficulty comes from neregularity of knit structure and its elasticity, but the final effect has a significant value in improving the appearance of the knitwear. For the future we want to study how we can fix these issues to make it possible to apply these embroidering processes to as many types of textile surfaces.

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