Proceeding 4th Indonesian Textile Conference
4th edition 2022
https://pubs.itc.stttekstil.ac.id/
ISSN : …….

MARKER EFFICIENCY AND IMPROVEMENT VIA COMPUTER AIDED DESIGN (CAD) SYSTEM IN THE GARMENT INDUSTRY

Pudjiati, Bima Putra Alneva, Ruslan and Sarah Apriliani*,*

Politeknik STTT Bandung

ruslanrein11@gmail.com

Abstract: Technology development are increasing rapidly with the arrival of industrial revolution 4.0. The purpose of the IR 4.0 is to make manufacturing industries and related industries works faster, more efficient, and costumer oriented, on the same time 4.0 industries is able to go beyond automatization, and optimalization. On a garment industry, especially on pattern and marker making process is being done by utilizing computerization, adopting the process of making it manually and being done by computer software CAD (Computer Aided Design). Utilization of CAD can increase the effectivity and the efficiency of marker, therefore this research plan is for the purpose gain a higher marker efficiency. The utilization of AccuMark Gerber will affect the time consumed by pattern making relatively brief and the result can also be automatically be transferred into a pattern making software. This research result is a form of comparison of marker efficiency between marker that made manually and made automatically using Gerber AccuMark. The methodology used is field study on component pattern arrangements on marker. The result shows that the marker efficiency made manually is 84.68%. That points is much higher than the marker that is arranged automatically by system which is 79%.

Keywords: IR 4.0, Pattern, Marker, CAD, Efficiency, AccuMark Gerber Software.

1. INTRODUCTION

IR 4.0 is a national strategy initiative from Germany government through the Ministry of Education and Research (BMBF) and Ministry of Economy and Energy (BMWi) which involves many professionals whether from the government, entrepreneur, and academics, (European Commission, Digital Transformation Monitor, 2017). IR 4.0 in a promising approach based in business and manufacture process integrity, and also the integrity of all involved in the chain of company (Supplier and Costumer), (Andreja Rojko, 2017).

Pattern is a fragment of all part of the clothing in the shape of paper or carton adjusting the size specification, the shapes, and the special marking, and sewing allowance. In the makings of computerized pattern and marker making with adopting the manual process, and utilizing the CAD (Computer Aided Design) software that is used to make designs, pattern, pattern grading, and production marker. According to Ondogan and Erdogan, 2006, CAD systems is more productive in making pattern rather than manual even on the simplest level, CAD pattern making is much more beneficial in responding to order faster, and in any sizes. Pattern that has already been made then arranged on a marker. Marker is a collections of pattern that is arranged upon a paper or fabric with a certain length so that it has optimal efficiency in fabric use.

Marker created with a CAD system will be faster. The efficiency of the use of cloth can be directly identified and the marker data made in the form of a file, so that it can be stored on a computer, if at any time the marker is needed it can be reused. (Gunawan, et al., 2021) The preparation of patterns on markers using a CAD system is not fully automated. We can choose to arrange our own markers by arranging the components one by one in the marker area or it can be automated with the system. Both of these will result in differences in marker efficiency.

2. MATERIALS AND METHODS

2.1 Materials

In this research process, several supporting tools are needed to facilitate the research process. The tools and materials needed are the size specification of chemical laboratory coats, measuring tape, master pattern of chemical laboratory coats, samples of chemical laboratory coats, computers and CPUs that are already installed and ready to be used.

2.2 Method

This research is a field study so the research methodology used is experimental practice with the following procedures:

1. The Process of Pattern Making

Pattern making using AccuMark Explorer application. Do the settings on the application starting from the file name, rule table, lay limits, and annotations. After the settings are ready, open the pattern design application then create a pattern based on the size specification.

2. The Process of Marker Making

There are 3 methods of compiling markers used in this experiment, namely; bundle alteration direction bundling method, method of alteration bundle same direction, and same size same direction method

3. Automatic Marker Arrangements

The preparation of markers is automatically done by making settings on lay limits, things that can be changed are bundling and piece options, source markers and destination markers.

4. Manual Marker Arrangements

The preparation of markers manually is carried out with the initial step, namely setting the lay limits section, then entering the easy marking section by entering the pattern components, then arranging them one by one.

3. RESULTS

The components that have previously been made in the pattern design application are then arranged into markers in the easy marking application.

3.1 Automatic Marker Making

Automatic marker creation was carried out 3 times and resulted in the following efficiency and marker length:

Figure 1. First marker arranging results

- The first experiment, the method used was bundling alteration bundle alteration direction so that the marker direction was in the opposite direction. The resulting marker efficiency is 79% with a marker length of 8m 95.43cm.

Figure 2. Second Marker Arranging Results

- The second experiment the method used was alteration bundle same direction. The resulting marker efficiency is 78.03% with a marker length of 9m 6.63cm.

Figure 3. Automatic marking third result

- The third experiment, the method is same size, same direction. The resulting marker efficiency is 78.81% with a marker length of 8m 97.66cm

2. Manual Marker Making

The components that have been made are arranged one by one manually.

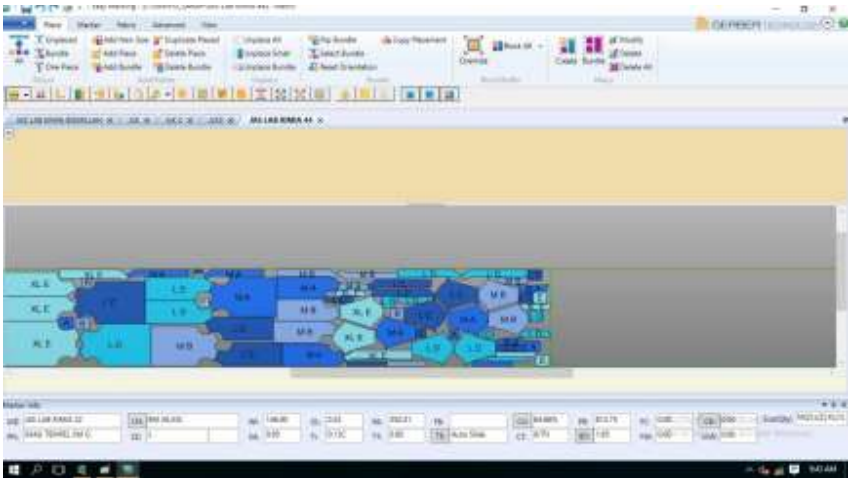

Figure 4. Manual marker result

The manual arrangement of markers resulted in a marker efficiency of 84.68% and a marker length of 8m 26.33cm. This marker uses the Alteration Bundle Alteration Direction bun bundling method.

4. Discussion

In this study, an experiment was conducted on the preparation of markers from the pattern of the components of a chemical laboratory coat in several ways available on the accumark gerber software.

Gerber accumark software is software that can be used by a pattern maker to create patterns, develop designs, grading patterns, and make markers. The function of this software is to speed up the creation of pattern designs, simplify the pattern grading process, speed up the manufacture of markers and maximize the efficiency of material requirements.

4.1 Speed up Pattern Design

In the software there is an option to create component shapes manually and automatically. Automatically making component shapes certainly doesn't take a long time because the pattern maker only needs to input the measurements for each part.

4.2 Simplifying Grading Process

The meaning of grading is the process of enlarging or reducing the size of a component without changing its original shape. The sizes used are M, L, and XL. With the accumark gerber software, the pattern maker only needs to make 1 size which is used as the base size. Next we just need to fill in the difference in grading numbers for other sizes. This is advantageous because there is no need to make patterns for all sizes to be made.

4.3 Speeding up Marker Making

Marker is a collection of pattern images arranged on paper or cloth with a certain length so that it has optimal fabric use efficiency. The arrangement of patterns from the components of the laboratory coat can be directly done in the accumark garber software. Making markers can be done automatically or manually. In order to obtain maximum efficiency, an experiment was carried out with the preparation of the two methods to compare which method produced the highest efficiency.

4.4 Automatic Marker Making

Automatic marker creation means that the system will automatically arrange markers based on the inputted settings. In automatic marker generation, there are three options available.

1. In the first experiment, the method used was alteration bundle alteration direction. in this setting, the direction of the marker becomes the opposite direction so that the position of the component can face right or left. The composition of the components can be seen in figure [1]
2. In the second experiment, the method used was alteration bundle same direction. This setting makes the marker direction the same (one direction) so that all component positions face one direction (left). The composition of the components can be seen in figure [2]
3. In the third experiment, the same size method is the same direction so that the direction of the marker becomes the same with the same size. The composition of the components can be seen in figure [3]

4.5 Manual Marker Making

Manual marker creation means that the marker arrangement is done manually by the pattern maker. Because the fabric used is not patterned, the method of using bundle alteration direction is used so that the position of the components can face either the right or the left. The composition of the components can be seen in figure [3]

5. CONCLUSIONS

The use of different settings in the preparation of markers can affect the efficiency and length of the resulting marker. In this experiment, it was shown that manual marker arrangement resulted in greater efficiency and shorter marker length than manual marker arrangement. These results will have an impact on the needs of the fabric. High efficiency reduces the need for fabric. Fabric savings will be very beneficial for a garment industry that manufactures products on a large scale.

REFERENCES

1. Azmi, S. U. (2012). *Studi Komparasi Efisiensi Hasil Pembuatan Busana Menggunakan Pola Kontruksi (Manual) dengan Pola Komputer (Software Optitex) Pada Produk Kemeja dan Gaun Pesta.* Semarang: Universitas Negeri Semarang.
2. Gunawan, Budy Handoko, Ida Nuramdhani, Totong, Ichsan Purnama, Achmad Ibrahim Makki, . . . Deni Sukendar. (2021). *Transformasi Industri 4.0 - Manufaktur Proses Tekstil dan Apparel*. Jakarta Selatan: Pusat Pengembangan Pendidikan Vokasi Industri BPSDMI Kemenperin.
3. Hariana, S. M. (2012). *Penuntun Menjahit Praktis*. Bandung: Wahana Media Pustaka Bandung.
4. Ondogan, Z., & Erdogan, C. (2006, March). The Comparison of The Manual and CAD System for Pattern Making, Grading, and Marker Making Process. 14, 62-67.
5. Puranik, P., & Jain, S. (2017). *Garment Marker Planning*. Gujarat, India: The Maharaja Sayajirao University of Baroda.
6. Tandjung, S. (n.d.). AccuMark v8.4.1 Training Module. Jakarta: Brothersindo Machinery.
7. Zahri, W. (2014). *Modul Tailoring*. Padang: Fakultas Teknik Universitas Negeri Padang.