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Hinal Kaystha

Textile and Apparel Design,
Institute of Fashion
Technology, Faculty of Family
and Community Sciences, the
Maharaja Sayajirao University
of Baroda, Vadodara, Gujarat,
India

Dr. Madhu Sharan

Textile and Apparel Design,
Institute of Fashion
Technology, Faculty of Family
and Community Sciences, the
Maharaja Sayajirao University
of Baroda, Vadodara, Gujarat,
India

Correspondence

Hinal Kaystha
Textile and Apparel Design,
Institute of Fashion
Technology, Faculty of Family
and Community Sciences, The
Maharaja Sayajirao University
of Baroda, Vadodara, Gujarat,
India

Use of computer technology in apparel sector

Hinal Kaystha and Dr. Madhu Sharan

Abstract

Clothing – a very important aspect of our lifestyle. It does belong to our Past, Present and Future. Attire of a person creates the first impression to anybody and everybody is conscious about it. Fashion changes very fast and everyone wants to present themselves differently each time. This creates demand for apparels hugely. To meet this demand, apparel production must have speedy manufacturing. Computers can help in apparel production at different levels which has been covered in this paper. This knowledge about computers in apparel production will help Designers, Manufacturer and Entrepreneurs.

Keywords: Computer Aided Designing, CIM, Garment Technology, Technology in Apparel Industry

1. Introduction

In today's competitive international business environment, companies are calling for new approaches to manufacturing. The growth in computer based technology during the 1980s, coupled with the emergence of flexible manufacturing systems and just in time inventory control forced movement away from the traditional product focused manufacturing paradigms of the mass production era to that of a process focused paradigm. Through the use of various computer aided technology in apparel sector attempts to pull all of the functional areas of a business into a cohesive, organized, interactive and wholesome. It includes actions as product/process design, manufacturing technology, material acquisition, information resource management and total quality management. Most of function in this sector utilizes activity of computer aided technologies to maintain quality, speed new product development, minimize costs and maximize flexibility to respond to ever changing customer needs.

This use of computerized system in apparel industry is not the same as a "lights out" factory, which would run completely independent of human intervention, although it is a big step in that direction. Part of the system involves flexible manufacturing, where the factory can be quickly modified to produce different products, or where the volume of products can be changed quickly with the aid of computers. Some or all of the following computer systems used in the textile and apparel industry include:

Computer Aided Administration (CAA): computers are used for marketing, sales order processing and stock control.

Computer Aided Design (CAD): computers are used for developing designs, pattern making, pattern grading, marker production and lay planning.

Computer Aided Manufacture (CAM): computers are used for store design, lay planning and cutting, sewing and pressing.

Computer Integrated Manufacture (CIM): a system that uses computers at every stage of planning, design and manufacture.

Electronic Point-of-Sale (EPOS): a computerised system that speeds up sales transactions and monitors stock levels.

2. Methodology

Method used for data for paper was through secondary sources such as Journals, Articles, Blogs, Various websites.

3. Results and Discussion

Textile Designing Softwares

Textile designing software greatly aids the work of the designers and improves their potential and inventiveness as well. These software packages help the designer in the testing with the number of textures, colours and patterns for producing the perfect designs along with the availability of sketch backgrounds in concept boards, tools for repeating patterns, texture mapping and product renderings.

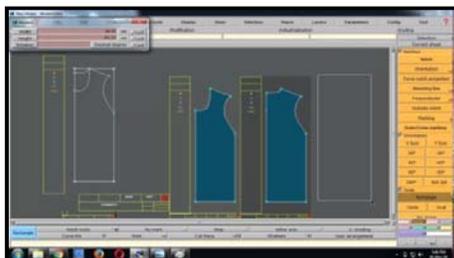
Designs can be made faster and more precisely, available for designer's quick access. A few simple design software packages are Adobe Illustrator, Corel Draw, Poser among and others. Technical textile designing software has different yarn, fabric (woven & knitted) and motif designing options inbuilt in them. The new designed fabric can be easily viewed in a fraction of seconds.

Now - a - days latest designing softwares are integrated with looms, doobby and Jacquards. Wonder weaves, Reach technologies, Summa graphics, and Pro style are a few companies dealing with these softwares.



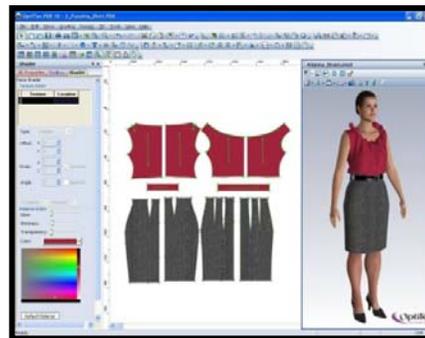
Garment designing Software's: 3D Scanning, Patternmaking Softwares and Virtual Garment Styling ranges are the major developments under this advancement. 3D Scanning: New techniques are continuously developed for the digitization of the human body and new tools are introduced for a more proficient use of the resulting data. Nowadays, 3D scanning technologies are applied to different parts of the human body and systems are commercially available for the measurement of practically any surface area of the human body. Laser Scanning, White light scanning, Image processing scanning, Millimeter-wave radar, Digital tape measurement are different tool for body scanning in 3D.

Instead of minutes, now within a few seconds only, body measurement work can be completed. Lectra Modaris, TukaTech are few companies dealing with these software's.



Patternmaking Software's: Pattern making is a process of arranging all pattern pieces of garment along the fabric

widths so as to achieve utmost marker efficiency. Initial practice of hit and trial by experienced tailors used to be very time consuming. To avoid fabric wastage is also very important in narrow profit competition. Latest CAD techniques have facilitated this work. 3D Modaris software by Lectra uses traditional pattern design tools to make pattern generation faster. Either creation from scratch or from existing patterns, grading reproducing traditional or advanced methods, checking using state of the art techniques; Preproduction tasks performed early in the development process are consequent time saving. Furthermore Modaris can also calculate fitting and grading and helps to significantly decrease following back and forth checking and adjustments. With Modaris, internal and external communication is simple and thanks to its wide conversion possibilities. Tukatech, Gerber, Jindex, Optitex are few softwares used for Pattern Making as well as Marker Planning.



Virtual Garment Styling and Stitching Software's: Drape modeling, 3D visualization of designed garment in draped form is one of the key technologies in computer aided garment design and Internet apparel systems. It has become necessary for the designers to evaluate the design, fabric suitability and the accuracy of garment patterns digitally. Many CAD companies are working for developing 2D to 3D design system whereby 2D pattern pieces can be virtually sewn together by computer to examine the fit and drape on a virtual 3D mannequin. Garment can be viewed with fabric designs/textures and drape characteristics for a realistic image, thereby creating a virtual sample. Alterations can be made in 2D or 3D. Any changes made to the called and selected patterns on the virtual models are automatically translated into a two dimensional pattern and vice versa.

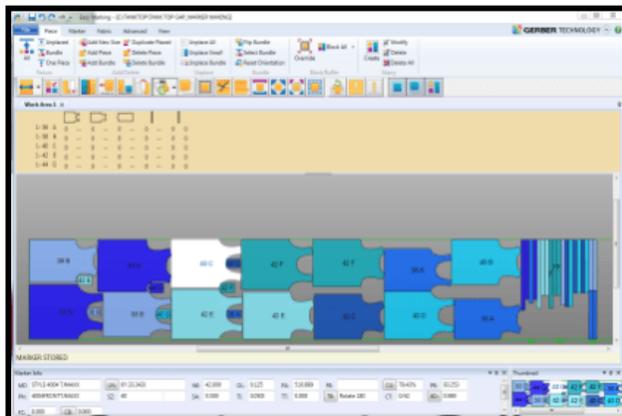
The latest innovation in the virtual draping field is the fit check on the dress forms in different body postures to analyze the curvature and falls of the different areas of the different garment like t-shirts, trousers, aprons, skirts and jackets. Modaris 3D Fit fashion enables recreation and validation of styles, fabrics, motifs and colour ranges; It allows pattern designers to check garment fit in various fabrics and sizes, virtual review of sample, the presentation and confirmation of collection elements. Some other 3D virtual draping softwares include Optitex, Accumark APDS3D by Gerber, PAD System, Maya cloth, Syflex LLC system, efit by Tukatech.

CAM for Apparel Industry

Computer aided manufacturing deals with the practices and different stages of the garment making with the help of computers. The computers have entered many departments

like plotting, spreading, cutting, and surface ornamentation (printing and embroidery).

- a. **Plotting:** Latest plotter systems have replaced traditional paper pen and other tracing and marking techniques. These days the plotters are connectable to computer systems and can plot files received through the Internet. ALYS plotter of Lectra Company comes with communication features enabling remote maintenance, which can reduce downtime.
- b. **Spreading:** Traditional spreading methods are generally performed with manually. That generally leads to increase in work time and labor fatigue. Latest spreading machines are inclusive of pattern making softwares. Spreading instruction and layout can be fed directly from pattern making softwares. ProgressBrio55 of Lectra corresponds directly with CAD workstations and cutting machines, creating significant time and material savings and eliminating the possibility of errors. The system provides fast loading of rolls for high flexibility and ensures tension free lays and perfect fabric alignment. As a result, material savings are accomplished, despite any type of fabric chosen or the type of spreading used. YIN CAD is full intelligent layout system that provides efficient, saving and intelligent layout solution.



- c. **Cutting:** The use of latest cutting machines integrated with the computerized instructions for the fabric cutting has become the main obligation for superior and quality garment production. A quick access to marker libraries, an interface to Enterprise resource planning (ERP) systems for transfer of order information, planning outcome, marker making stations and other CAM equipment is also possible. Requests for new markers can be directly sent to the marker making stations and recover results of markers created directly from there. Lectra, Juki, and Gerber are few companies manufacturing computer integrated cutting devices



- d. **Sewing/Assembling:** Computer integrated sewing machines have sped up the sewing process. Sensitive touch button control, programmable needle positioning and threading systems, pressure measuring sensors, etc. are generally attached to the sewing machine. Programmable sensors, e.g. Stitch length regulator have made the process very simple and accurate. Companies like Brother, Juki, and Singer have a wide range of computer integrated sewing machine models.



- e. **Surface Ornamentation:** Computerized embroidery machines can be used to produce fine, multi coloured intricate motifs in very less time. Feeding of design is generally easy and quick. Similarly, textile digital printing techniques onto T-shirts and leather accessories in water based pigment colours with excellent wash fastness properties @ 700 dpi is the latest venture for the innovative manufacturers. Software such as Wilcom is used for creating embroidery designs digitally & it is connected to embroidery machine. Designs can be feed and according to the command embroidery is done on the fabric.

- f. **Internet Communication by Online Mass Customization:** Popular Internet systems work successfully for the buyers and consumers to review garment style, appearance, fit and suitability. With the use of the combination of the latest Computer Aided Designing and cutting technology, drape models are incorporated in the Internet websites for virtual shopping. The end customers log onto the appropriate websites, select the garment to be ordered, answer a set of questions on body measurements and appearance details like height, weight, shoulder width and many more. The order is automatically passed through software's like prototype that provides the information to enable the appropriate standardized pattern pieces for the garment to be selected and manipulated according to the online order questionnaire. Then the information is fed to the CAD package making the necessary changes and production of automatic marker is done and garment is produced through customization. The Hong Kong-based TAL group is producing made to measure shirts and trousers for individual American customers.

4. Conclusion

There can be a significant improvement in productivity & quality, leading time to drop with the use of computers in Apparel Sector. It can also be helpful for waste reduction in pattern designing, grading & alteration time. It gives greater flexibility in pattern designing, grading & marking. It saves time, energy by increasing quality of cutting room, reduction in sample making time, increase in monthly productivity and decrease in lead time. As more advancement in computer aided technologies are achieved,

more efficient working condition can be achieved in highly competitive era of globalization for garment industry.

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