

*A Paper on  
Development in Garment  
Manufacturing*

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## **Abstract**

**“One machine can do the work of fifty ordinary men. No machine can do the work of one extraordinary man”**

Men are here on earth are only developing the new technology.

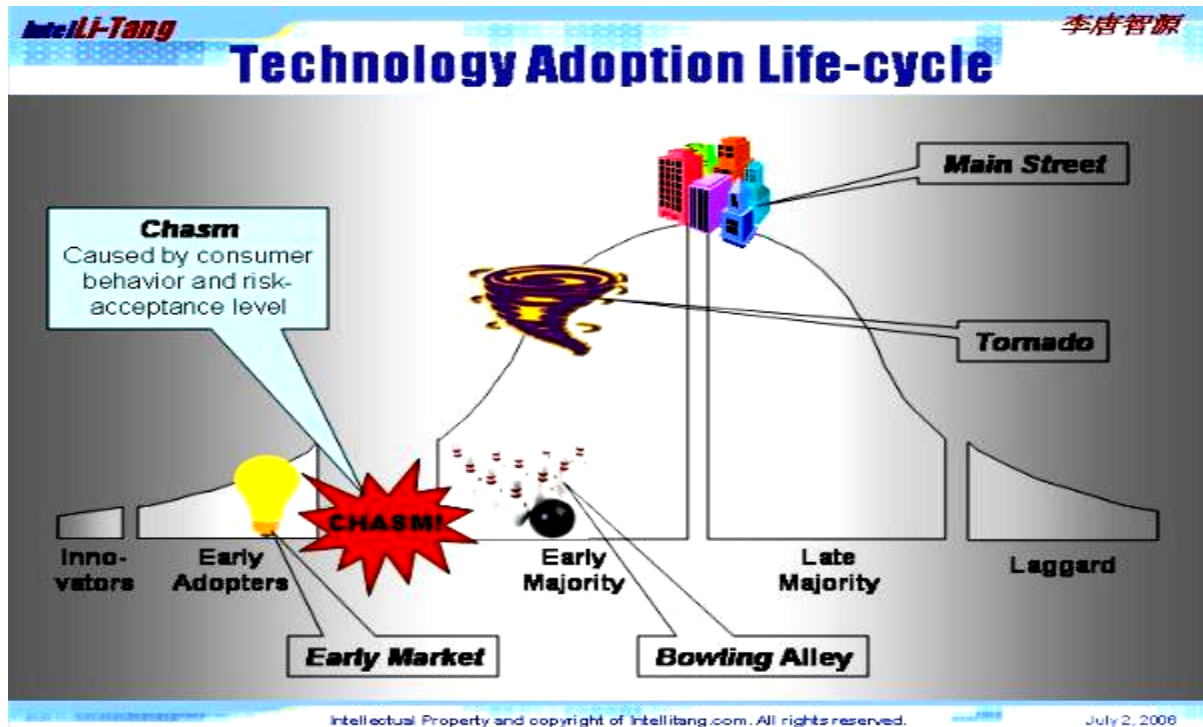
In Fashion Business is all about quick response, lots of saying, short run of multiple goods, speed of market, Flexibility high quality and cost saving. This is necessitates only increasing demand for new technology. Technological development only making the apparel industry to gets increases its production and quality.

As today's customer s are not purchasing goods or services with closed eyes every company wants to produce best quality with optimum price to compete each other. New garment manufacturing Technologies only making them to achieved their Costumer needs and compete.

As a result technology suppliers are striving hard to innovate and develop new technologies keeping with demands of Garment Industry.

In this paper I have highlighted some new technologies introduced in garment industry.

## Technology adoption Cycle:-



“No technology or machine is best, it is only better”

### What is garment manufacturing?

Garment manufacturing is the process of making the garments.

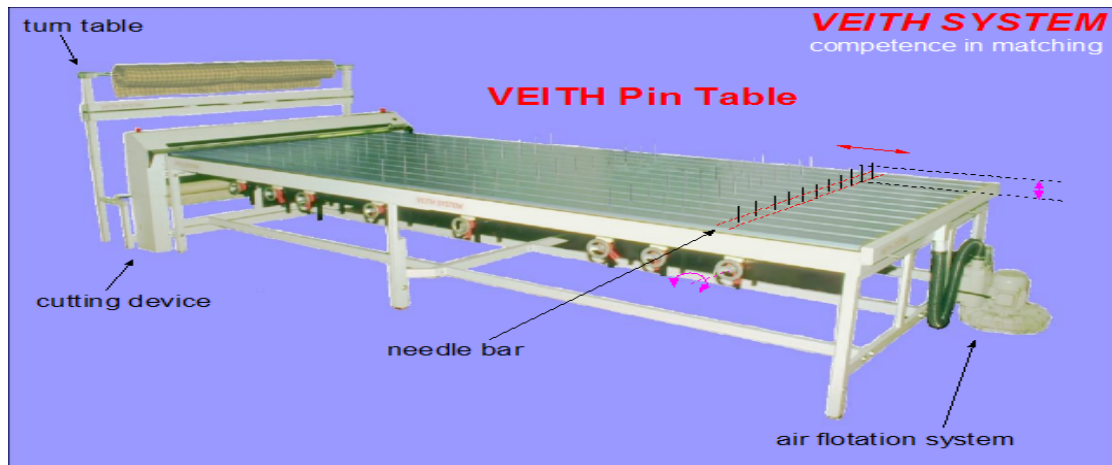
Process Involved in manufacturing the garment

- Spreading
- Pattern making
- Cutting
- Stitching
- Finishing
- Checking
- Packing

In coming lines I have discussed all the developments in technologies in the all respective processes involved in the manufacturing the garments.

## Spreading

### 1) Pin Table



Spreading is most important process in garment manufacturing. Spreading on checks fabric is quite difficult in the industry. For this a new technology has been introduced is Pin table. On this there are several pins are operated with the help of air pressure and fabric is spread on it. The next layer is spread on it and fixed with pins so mismatching with checks does not occur.

### 2) Automatic Spreading Machines:-



## Features :-

# Cloth end auto-stop and return starting place.

# 5 minutes power auto-shut off.

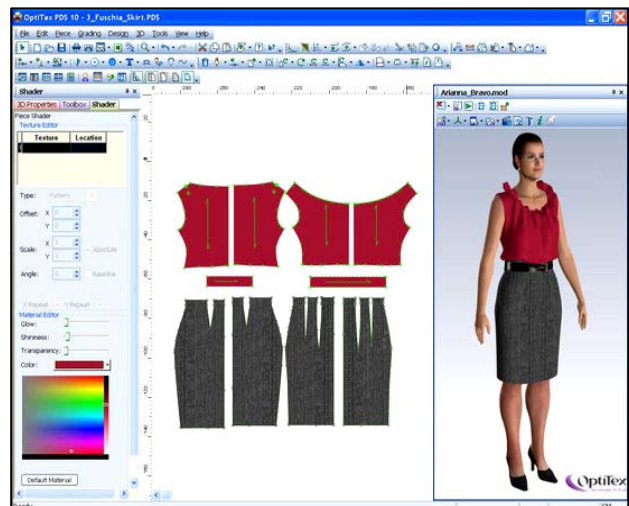
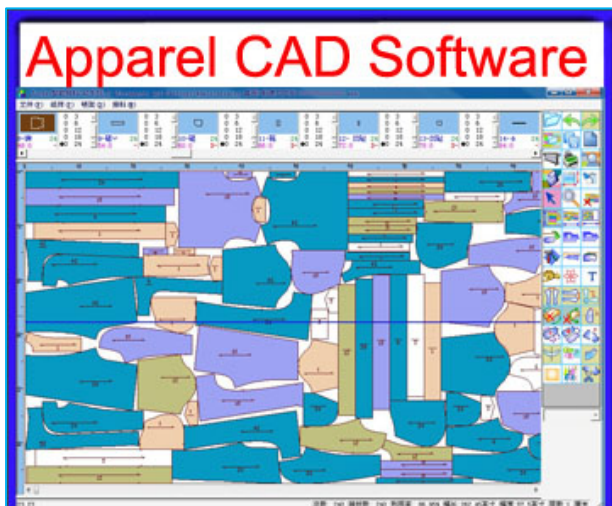
# When emergency stop, laid cloth won't be pulled

As per the features of the spreading machine, the fabric is laid on the table automatically and it auto stop and returns to starting place.

Due to this machine the production of the garment industry has been increased.

### 3) CAD/CAM

Stand outs in the CAD /CAM technology used for for silhouette pattern development, pattern detailing system, grading, digitizing, maker making, plotting, cutting operations, embroidery system, texture mapping by small, medium and large companies throughout the world. In recent years, the company has excelled in the fashion technology sector with innovative solutions focused on providing agility and flexibility to creative and productive processes, bringing automation and security to apparel production.

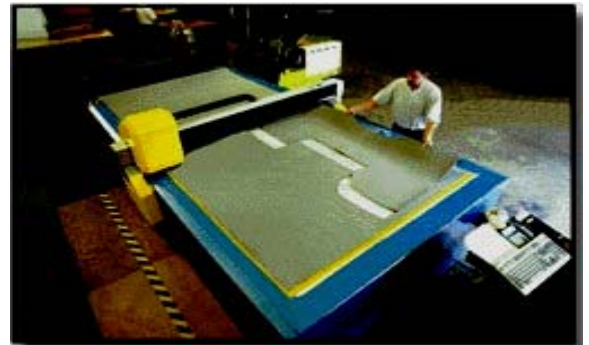


## Cutting

### 1) Computer Controlled Pattern Cutting Machine

This kind of cutting machine is associated with CAD software and the pattern design used to make on CAD.

This machine automatically cut the panels as per the patterns made on CAD with the speed of 900 mm/min.



## Stitching

**Quilting** is a sewing method done to join two or more layers of material together to make a thicker padded material. A **quilter** is the name given to someone who works at quilting but technology makes the quilter as a machines.



Features of Quilting machines:-

Computer controlled machines that sew each pattern with great accuracy at a very high speed.

- Complete one double bed quilt in just 3-5 minutes.
- The pattern can be enlarged or reduced by giving just one simple instruction. When the machine is quilting, the computer screen displays the quilting stitch position.
- If the thread breaks, the machine stops automatically.
- Automatic thread trimming.

## 2) Automatic fully controlled Stitching Machines

The machine time is 1.2 seconds per belt-loop, which ensures increased productivity. The feed mechanism incorporates a computer-controlled programmable X-Y method to allow the operator to change the number of stitches and sewing sizes. This is only a machine used for single operation and can be operated at a speed of 2500 RPM. Other machines are also available with the same technology i.e. fully computer controlled. This machine can be set at required no of Stitches/ inch, X and Y direction movement of needle and feed dog direction.



Automatic trimming and suction also takes place in these machines. Pattern can be saved in control panel

## Fusing

### Continuous fusing machines

Because of developments in fusing machines the production and quality of the garment industry has been tremendously increased. Its speed is around 2-12 mtr/ min and can heat up to 200 C. The outer body is insulated so it does not allow heat to come out.



## 3D Heating System

The new developed 3D heating system is the revolution in heating technology and assures most efficient fusing. The 3D heating system allows fusing on three lanes by using different temperatures. This means that open and sandwich fusing can be effected at the same time.

## Preheating System

The new 3D-heating system		Practical examples
Lane	Fusing temperature	Application
1 <sup>st</sup> lane	120° C	for pocket lining or other thin materials
2 <sup>nd</sup> lane	130° C	for small or side parts
3 <sup>rd</sup> lane	145° C	for sandwich with step inlay or plaque

## Finishing

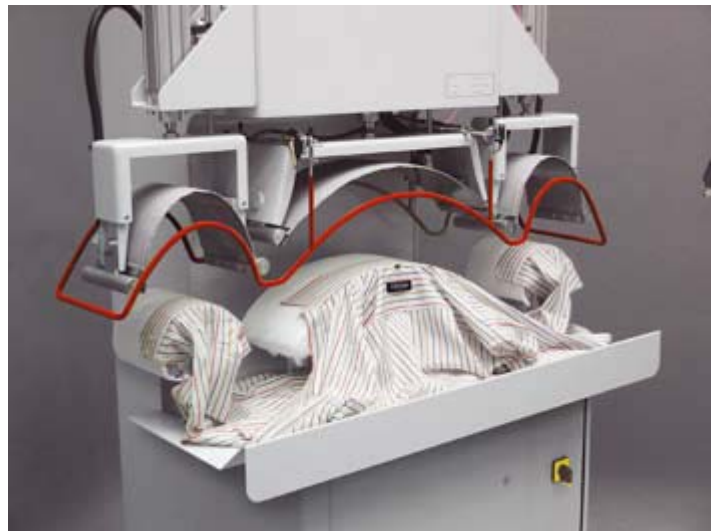
There are several other developments in Press for making the Garments; the most complication is with shirts. The technology used in garments finishing is shown in figure below.



Collar and cough pressing



Placket Pressing



machine has been especially designed for pressing collars and cuffs of both blouses and shirts. It can also be used as a neck press. The flexible, adjustable forms allow pressing of different sizes and even the pressing of shirts with short sleeves.



- Adjustable pressing forms for cuffs: After form changes the upper pressing form adjusts itself automatically to the shape of the lower form.
- Heating: Flexible heating mats guarantee an even distribution of temperature and pressure over the whole surface. The temperature is set digitally.
- Pressing pressure: The pressure can be adjusted very sensitively for all different kinds of fabrics.

### Continuous Shirt body press:-



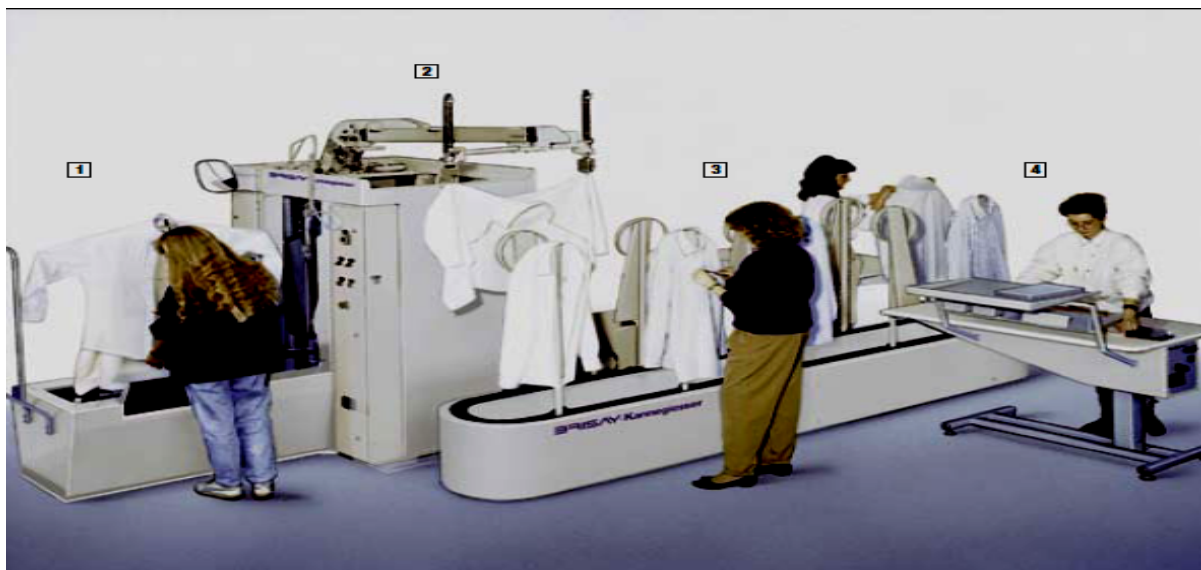
This press is used for pressing the body of the shirt.

One rotating heads which carry two panels rotates clockwise. The shirt used to clam on the panel and when machine starts the heated pad press the body of the shirt at the same time we can clamp another shirt on the face side panel.

The whole process takes only 5-10 sec/ shirt.

Its capacity is 2700 shirt/ day.

### Automatic Pressing (An advanced technology used in garment for pressing)



This technology has been introduced by VEIT KANNEGIESSER that is a unique technology: The pressing plates are heated by **an oil bath**. This has the following advantages:

- Absolutely constant temperature even at high speeds
- The ironing buck does not cool down even when processing wet shirts or for short interruptions

This technology is consisting of the combination of shirt body press, automatic unloading device and transfer system is suitable for smaller and larger productions. The automatic unloading device (2) removes the shirts from the pressing form (1) and hangs them gently on the transfer system (3) . The H-TS transports the pressed shirts to the shirt folding table. If necessary, it can be enlarged with up to four extensions.

Its production rate is around 1800 shirts/day.

### **Dolly Press**

This press is consisting of following features.

- Automatic loading of shirts.
- Production rate is 3000 shirts/ day
- Water spraying unit
- Up to 60 Programs feeding
- Seam tensioning elements
- Special shaped shoulder forms
- Electrically heated pressing plates for the shirt pocket
- Integrated suction plate
- Stretch-control



### **Development in software:-**

#### **ERP Software**

ERP means Enterprise Resource and Planning. It is an integrated system including all process and flow of any manufacturing organization. All modules Sale & distribution, Material Management, Production & Planning and Financial Accounting System are integrated in EMS ERP.

EMS ERP helps Garment Industry in arranging quick response by giving actual time answer to the fast changing customer needs. It gives you the information on the current status of sale order, Inventory control, production and finance.

ERP has as extremely powerful and versatile capacity-planning feature which lets you view data wise and capacity utilization of your production, and also lets you do a planned verses actual analysis of the order wise.



### Advantages of our ERP with respect to others

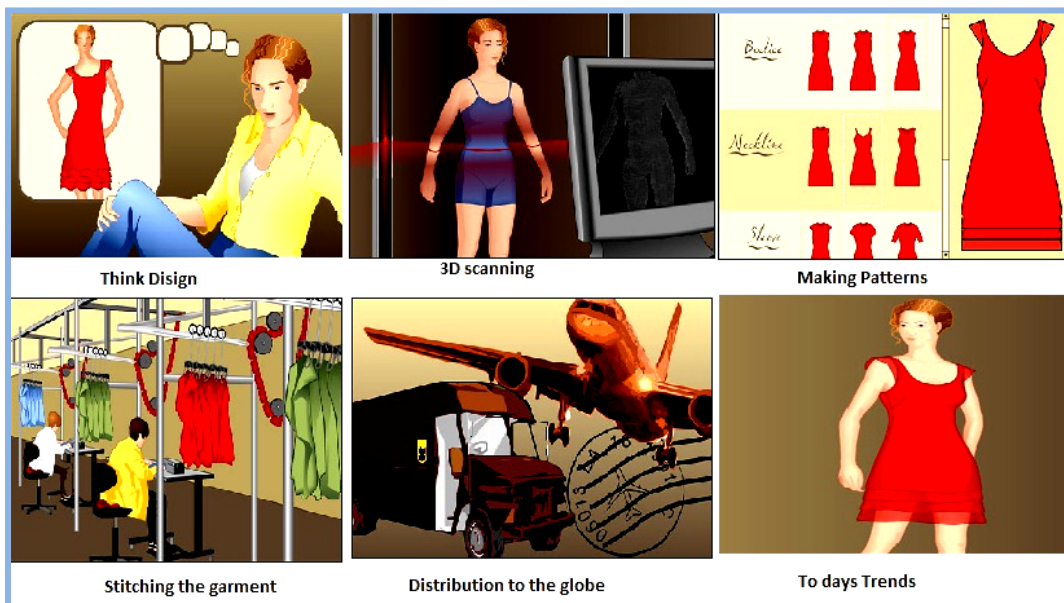
- Improve business performance.
- Support business growth requirement.
- Provide flexible provides integrated real time decision support.
- Eliminate human error as well as procedural delays.
- Provided competitive advantage by faster access to accurate and relevant information.
- Service qualities & implementation provided by high class business analyst and System Analyst and software engineers
- On the Competitive Price other than ERP softwar

### 3D Body scanner:-

BODY SCANNING IS A NEW TECHNOLOGY that is helping to shift the focus of apparel production from large quantities of cookie-cutter clothes to one-of-a-kind articles with individualized sizing and design features. A suite of technological advances, including body

scanning, has given rise to an emergent strategy of "mass customization" -- bringing consumers into the design and production stages, resulting in well-fitting, made-to-measure garments at competitive prices and turnaround times

Body scanners will play a critical role in mass customization because they enable retailers to rapidly collect three-dimensional (3D) data for each consumer. Computer software can then analyze the high-resolution images of the body to extract precise, standardized tailoring measurements. In conjunction with advanced design and production processes, body scanners will thus allow consumers to benefit from a modern form of custom tailoring. Traditional mass-production clothing will also be improved as a result of body scan technology. Industry and academic researchers are beginning to use large amounts of anthropometric (body measurement) data captured by body scanners to adjust the sizing systems of ready-to-wear clothing lines so that everyone in the target population is better fitted



## Flexible Manufacturing System in Garment Industry



Flexible manufacturing system (FMS) is a manufacturing system in which there is some amount of flexibility that allows the system to react in the case of changes, whether predicted or unpredicted. This flexibility is generally considered to fall into two categories, which both contain numerous subcategories.

Most FMS systems consist of three main systems. The work machines which are often automated CNC machines are connected by a material handling system to optimize parts flow and the central control computer which controls material movements and machine flow.

In this system the garment parts are automatically advanced to the next process machine.

In this process the breakdown of garments is carried out in such a way that almost all the operation are divided of same time.

The main advantages of an FMS are its high flexibility in managing manufacturing resources like time and effort in order to manufacture a new product.

### **Radio frequency Identification (RFID), A Breakthrough in Traditional garment**

#### **What is RFID ??**

The name RFID (Radio Frequency Identification) is being associated with a few Chinese names which usually highlight its different features. These include Electronic Sensor Chip, Short-Distance Card, Sensor Card, Non-Contact Card, etc. In fact, RFID does have a unique Feature – the non-contact automatic identification technology. Generally speaking, an RFID system consists of 3 parts – tag, reader and antenna. After the tag has entered the magnetic zone, the reader receives the signal and re-delivers it out. And by sensing the radio wave obtained from the non-current tag or the so-called passive tag, it then delivers the product information, which has been stored in the chip. It can also do so by actively transmitting the signals of the frequencies regarding the current tag and the so-called active tag. After the information is received by the reader and gets decoded, it will then be transmitted to the Central Processing Unit for data processing.

The garment-manufacturing industry always aims for new product development and efficiency improvement in production. In past years, advanced computer technologies already facilitate new manufacturing operation and build up management tools. Today's manufacturers are looking towards more advances and benefits with their focuses shifted to many different types of networking tools. These tools do enable them to seek better

opportunities on more complicated areas working with RFID like inventory control and supply-chain management, as well as the B2B e-commerce transactions. However, while employing this latest technology, manufacturers are facing a long-standing problem – how the new technologies can bring better coverage and practicality to the running of the enterprise.

#### Advantages if RFID in Garment Industry

a) Workers attendance card

b) Product Flows



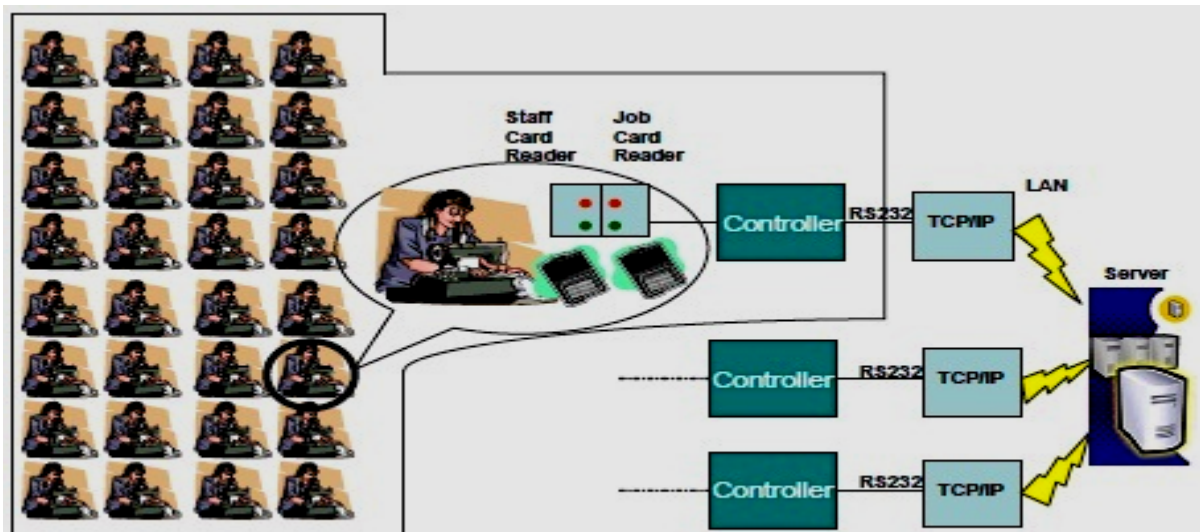
c) For keeping the records of the work done by each staff in sewing department.



*There will be a low-cost tag smart card and reader next to each of the sewing machines for recording the details of work by each staff.*

d) For collecting the data regarding production progress and staff performance for future analysis.

e) For better flows and maintain WIP



*RFID technology in garment industry for better flows amongst the sewing machines in the WIP proces.*

## **Conclusion**

Today's era for success says,

**“Give the customers what they want, not what you have”**

For being best in your competitors you must follow your customers, and provide them right thing, at right place, at right price in right quantity.

Then and then only you will succeed. For achieving this garment industry need to develop and advanced their technology. Without advancement you can produce but you can succeed.

## **References**

1. [www.apparelviews.com](http://www.apparelviews.com)
2. [www.imagesretail.com](http://www.imagesretail.com)
3. The Technology of Clothing manufacture by **Harold Carr and Barbara Latham**

## **About the Author**

**The author is a student of M.F.Tech with National Institute of fashion Technology, Gandhinagar.**