



Faculty of Engineering

Department of Textile Engineering

REPORT ON

Industrial Attachment

At

Meghna Knit Composite LTD.

Gilarchala, Sreepur, Gazipur

Course Title: Industrial Attachment

Course Code: TE-410

Submitted By

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Textile Engineering.

Advance in Apparel Manufacturing Technology

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Finally, we must acknowledge our Parents with due respect for their constant support, patients and believe on our ability which drives us in the successful completion of this report.

Declaration

I hereby declare that, this Industrial Attachment has been done by me under the supervision of Md. Abdullah Al Mamun, Assistant Professor, Department of Textile Engineering Daffodil International University. I also declare that neither this Industrial Attachment nor any part of this Industrial Attachment has been submitted elsewhere for award of any degree or diploma.

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1. Executive Summery

This report is titled “**Report on Industrial Attachment at Meghna Knit Composite Ltd**”. By achieving practical knowledge from the industrial attachment it is possible to apply the theoretical knowledge in the technical field. For any technical education, practical experience is almost equally necessary in association with the theoretical knowledge. The industrial attachment is the most effective process of achieving the practical experiences. It provides us sufficient practical knowledge about Production Management, Productivity, Evaluation, Work Study, Efficiency, Industrial Management, Production Planning & Controlling, Utilities and Maintenance of Machineries and their Operation Techniques etc. **Meghna Knit Composite Ltd** is a modern textile industry based on knit garments production. Our approach was to know and work with all the parameters of each section and practice with technical experts. As our academic advance study was in Weaving Technology our emphasis was in understanding and learning of Weaving. Industrial attachment is an essential part of four years B.Sc. in Textile Engineering course of **Daffodil International University**. We had the opportunity to perform the industrial attachment with **Meghna Knit Composite Ltd** *During 2 Months long attachment*, we studied the Man, Machine, Material and Planning, Grey Fabric Inspection, Finished Fabric Inspection, According to our studies in the whole chain of the factory we have prepared the following report and would like to present as our internship report. B.Sc. in Textile Engineering is the combination of theoretical knowledge and the practical experiences. The main objective of this training is to comprehend our theoretical knowledge along with the practical knowledge. It also enabled us to orient ourselves with the practical environment which is our place of future work.

2. Information about factory

2.1 Introduction:

Meghna knit composite Ltd. instigated its journey in the last quarter of 2006, with a vision of becoming the most recognized knitwear manufacturer of the country as well as to make the widely known reputation of Bangladesh as a global clothing leader to a new height by offering the best blend of quality and efficiency. Meghna knit composite Ltd (MKCL) is equipped with the most advanced textile technology from the US, Europe, Hong Kong and Japan. We have not only ensured the best ever technology but also a band of highly skilled, professionally dedicated industrial manpower and management team to exel in tune with our technology. This built-in composition is to ensure quality in producing knit textiles for onward manufacturing of ready-to-wear knit garments and knit fabrics—all under one roof.

2.2 Positioning:

Focusing solely in knitwear apparel lines, MKCL has adopted a structure by reengineering its value chain to deliver high quality products in shorter lead time with flexibility in order size. Moreover, having endless efforts to ensure internationally accepted employment practice, our clients recognize us as a partner to protect their value system and images among final consumer.

2.3 General information

Company Name	: Meghna knit Composite Ltd.
Legal Status	: Private Limited Company.
BKMEA Membership Number	: 834
Membership Type	: Ordinary Member
Year of Establishment	: 2006
Head office address Baridara	: House.49, Sharwardy Avenue Block-k, Gulsan- Dhaka-1212 Phone : +880-2-9854591-6, Fax: +880-2-9854597, E-mail : info@meghnagroup-bd.com Web : www.meghnagroup-bd.com
Factory Address	: Gilarchala, Sreepur, Gazipur ,Bangladesh
Name of the Banker	: 1) Prime Bank Limited. Principal Branch. 82, Motijheel Commercial Area, Dhaka-1000, Bangladesh. 2) United Commercial Bank Ltd. Principal Branch. 58, Motijheel C/A, Dhaka-1000, Bangladesh.
Nature of Business	: Completely 100% export oriented knitwear manufacturing & exporting Industry. Also have the permission to import materials related with export.
Contact Person	: Mmoklasur Rahman pinto - Managing Director. Mohammad Monjur Hasan– Sr.General Manager
Manpower	: 1800
Machinery setup	: Complete sewing & stitching setup for 20-lines. Complete setup for producing 6.00 MT knit fabrics (finish) per. Day. Computerized Embroidery setup for own garments production. Complete Screen Printing setup with latest curing machine for own production.
Export Market	: Italy, Germany, France, UK, Sweden, Japan.
Product wise capacity	: High Fancy/Polo shirt = 2.40 Million Pcs. (Annually) Basic knit/T-shirt & others = 6.00 Million
Annual Export Turnover	: USD 24.00 million (in US\$)

2.4 Layout



Sample Section



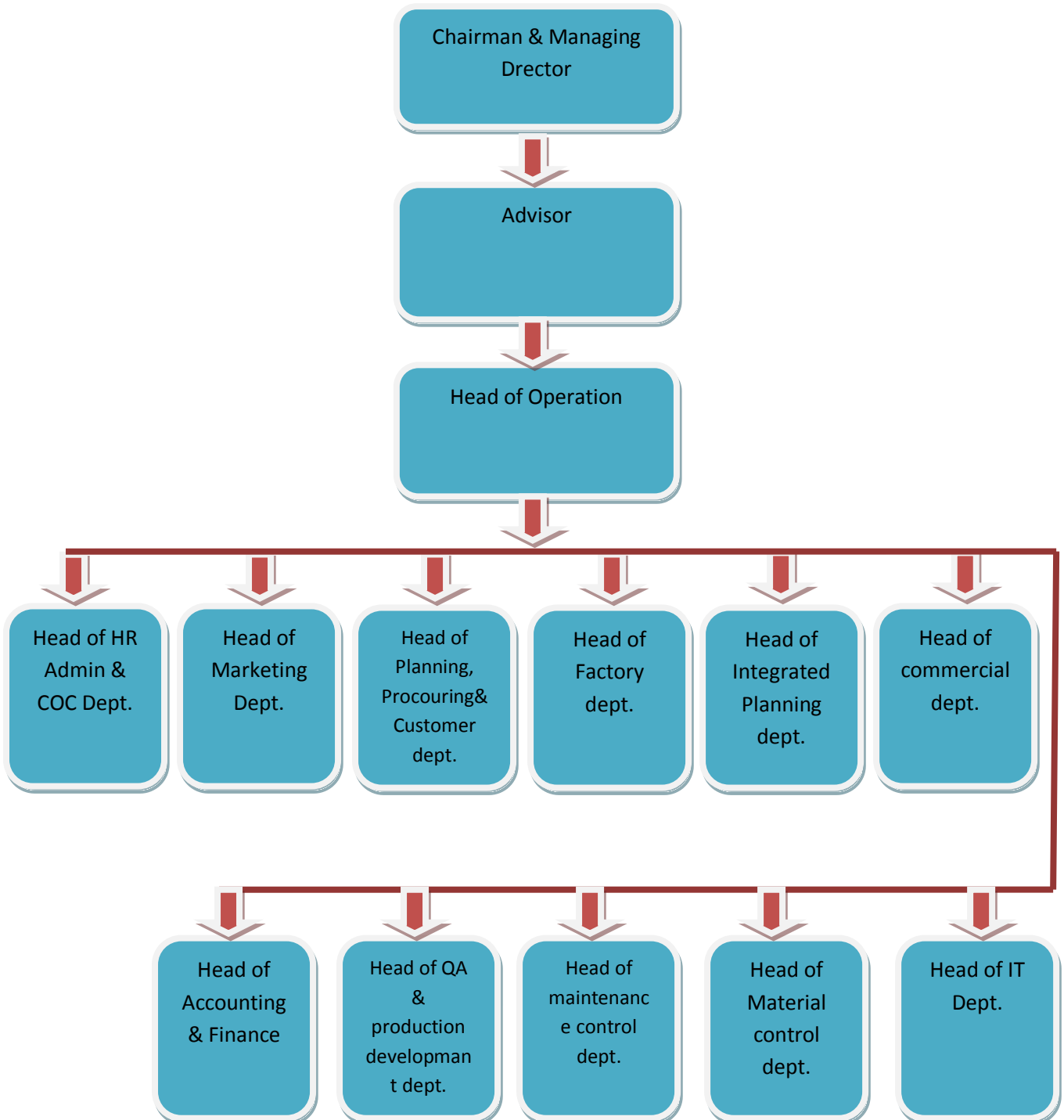
Cutting section



Sewing Section

2.5 Organogram of Head Office

Head office Organogram in **Meghna** Group is given below:



2.6 Sister Concern of Meghna Group

1. **Meghna Bangladesh Ltd.**
2. **Beta packaging Ltd**
3. **Uniglory Home Appliance Ltd**
4. **Meghna knit composite Ltd**
5. **M & U Cycle Ltd**
6. **Siambangla Industries Ltd**
7. **Meghna Automobile Ltd.(distributors of kia Motors)**
8. **Executive Motors Ltd.(Distributor of Bmw)**
9. **Executive Technologies Ltd.(Distributor of Acer,Taiwan)**
10. **Executive Machines Ltd. (Distributor of Apple,USA)**
11. **Unichem Ltd**
12. **Prime Bank Ltd**
13. **People,s Leasing Co.Ltd**

2.7 Products

- ❖ Men/Ladies/Girls/Boys/Infants Knitted Fancy T-shirt,
- ❖ Polo Shirt
- ❖ Tank Top
- ❖ Shorts
- ❖ Skirts
- ❖ Tank Dress with quality prints
- ❖ beading plating
- ❖ hand works
- ❖ Embroidery
- ❖ etc.

2.8 Buyer Name:

H&M	Zara
Next	TESCO
C&A	Mayoral
Perry Ellis	Gymboree

2.9 Mission:

From 2006 till now, Meghna Group always expands itself. Meghna group offers a proficient production facility, even for smaller volume orders which attached an overall efficiency to serve both volume customers as well as upper class buyers.

Meghna's products export in different countries such as Japan, Italy, France, Sweden, Norway, Finland, UK & Canada. Our production management is **ISO 9001:2000** certified and our fabrics quality is **Oeko-Tex** certified. Day-by day our production has been increased along with our experience. We always give priority to hard work perseverance, which bring us today in this admirable and viable position.

2.10 Vision:

The main vision of Meghna Group is to provide the best service with quality product. With a slogan of 'From yarn to the ultimate garments' Falcon is developing step by step through its honesty, integrity and hard work. Till-to-date, the top management intensively supervises & keeps in touch with the production, merchandising & sourcing, which often comes handy for our buyers. The communication with buyers is strongly maintained by us that develop as bond of reliance

2.11 Machinery list:

Finishing Section			
26	Thread Sucker		5
27	NEEDLE DETECTOR		2
28	Iron		35
29	Belt Stapler		1
30	Electric Boiler		5
Cutting Section			
31	Cutting Machine		9
Printing			
32	Dryer Machine	Local	2 Set
33	Curing Machine	Japan	2 Set
34	Heat press	Local	6 Set
35	Flock Machine	Local	6 Set
Embroidery			
36	EMBROIDERY MACHINE WITH 20 HEADS	KOREA	5
37	EMBROIDERY MACHINE WITH 6 HEADS	KOREA	1
Washing			
38	Washing Machine, 550 LBS	Local	3
39	Sample Machine, 60 LBS	Local	1
40	Sample Machine, 80 LBS	Local	1
41	Hydro	Local	1
42	Dryer, capacity 10800 Pcs/day	Local	4
Utility Section			
43	Generator (Gas)	U.S.A	1
44	Generator (Diesel)	England	1
45	Boiler	Korea	1
46	Compressor	Korea	4
47	Water Pump		2
48	Sub-Station		3
49	Generator For Power Supply (315 KVA)	Singapore	1
50	Generator For Power Supply (170 KVA)	Germany	1
51	Generator For Power Supply(88+50 KVA)	Korea	2
52	Generator Cummins (330 KVA)		2

3. Description of the Attachment

3.1.2 Types of sample produce by falcon international knit composite according to buyer demand:

There is various type of sample those are given below:

1. Original sample:

This type of sample made of original fabric and accessories according to buyer sketch and measurement.

2. Proto/ Develop sample:

Here measurement is very important but need not to match the fabric and accessories.

3. Seal sample:

Seal sample is approved by the buyer with tag.

4. Size set:

All sizes of sample are produced such as S, M, L, XL, etc, and send to buyer.

5. Wash sample:

Shade of wash sample must be matched with original sample after washing. It also determined by grey scale.

6. Pre-production sample:

First garment of bulk production is called pre- production sample.

7. Add sample:

For advertising of the product buyer want this type of sample.

8. Sales man sample:

To supply the new product in different showroom, buyer wants this sample.

9. Photo sample:

Only photograph of the product is send to buyer.

10. Shipment/ Reference sample: After completion the shipment of the garment some garment are kept in sample room which are known as shipment or reference sample.

11. Pre-line sample:

This type of sample is collected from anyone line during production.

12. Lab-test sample:

Sample is tested by third party or buyer's nominated lab.

3.1.3 Pattern making:

After receiving an order in most cases buyer gives them a complete pattern and they make sample according to given pattern. But in some cases they prepare the pattern by own when buyer don not give any pattern.

3.1.4 Marker making

Marker is a thin paper which contains all the pattern pieces of a garment. It is made just before cutting and its purpose is to minimize the wastages. The width of a marker is equal to the width of the fabric and it should not be greater than the width of the fabric i.e. the width of the marker is kept less than or equal to the width of the Fabric.

The pattern pieces should be placed very carefully in such a way that it will obviously minimize wastages.

Objects of marker making:

- To reduce cost;
- To improve the quality of the garments;
- To reduce the cutting time;
- To facilitate large scale production.

Possibilities of marker making:

Generally there are two methods by which marker can be made –

3.1.5 Manual Method Of Marker:

The man performs it by himself using his hands. It is a conventional system and requires more time.

Manually two types of marker are made –

1. Full size marker:

Full size marker is made for production purpose.

2. Miniature type marker:

Miniature type marker is sometime made and its purposes are to plan or schedule and learn or study i.e. for planning and learning purposes.

3.1.6 Computerized Method:

Now the commonly used system of marker making is computerized method. In this system, a man performs it by himself using computer software (CAD and CAM) and it requires considerably less time than manual system. Two types of marker are generally made using computerized system –

1. Full size marker:

Using ‘Digitalizing Board’ the pattern pieces are input into the computer. Computer uses software and a marker paper is printed out that will be used in the production.

2. Miniature type marker:

Only for learning, practicing, and planning purposes this type of marker is printed from the computer.

Computerized system is also two types –

Interactive:

Manually it is done by using computer. Generally a computer operator can do it and requires less time.

Automatic:

The pattern pieces are replaced on to the marker by programming. A high technician can do so and it requires more time.

3.1.7 Factors considered during marker making

The important factors considered during marker making are –

1. Nature of the Fabric:

2. The fabric may be either symmetric or asymmetric. Thus the nature of the fabric should be considered during marker making.

3. Lay planning of patterns:

4. Improper lay planning of patterns may create more wastage. Thus it should be taken under consideration.

5. Alignment of the pattern pieces according to the grain line:

6. It is also another important factor that must be considered. The warp direction of a fabric is very much important for a garment and the grain line indicates the warp or wale direction.

7. **Requirements of cutting:** Before placing the pattern pieces on to the marker or during marker making the cutting allowances are considered where necessary and where is not. It may produce more wastage and may reduce the dimensions of patterns.

8. Production planning:

9. Different types and sizes of garments manufacturing may run at a time in an industry. So during marker making it should be considered.

10. Size of marker:

11. During marker making we have to think about the table size, length of the fabric, etc.

12. Marker Efficiency:

13. The ratio between the total areas of the pattern pieces to the total area of the marker paper is technically termed as Marker Efficiency. It is expressed in percentage. If it is denoted by the symbol η then –

14. Marker Efficiency (η) = (Total areas of the pattern pieces/Total area of the Marker paper) * 100

3.1.8 The factors which influence the Marker Efficiency –

- ❖ Manufacturers of the marker;
- ❖ Size of pattern pieces;
- ❖ Length of the marker;
- ❖ Pattern Engineering;
- ❖ Nature of the fabric;
- ❖ Method of marker making;
- ❖ Marker width;
- ❖ Kinds or design of garments.

3.1.9 Fabric wastages inside and outside of the marker:

Inside wastage: That wastage that is obtained from the inter-spaces of the pattern pieces in the marker paper. It depends on the efficiency of the marker maker and on the size of the patterns as well.

OUTSIDE WASTAGE: Besides the inside wastages, some fabric is wasted outside of the marker –

Ends of the ply losses: Generally each ply of the fabric losses up to 4 cm at both side(Two sides * 2 cm).

End of fabric losses: The length of fabric may sometimes not cover the ply, it may finish its end at less than 5 yards (cut piece).

This piece of fabric goes through wastage and is called end of fabric losses.

Selvedge losses: Generally selvedge losses are 2% to 3%.

Purchase losses: Sometimes losses may arise from purchase. Wrong consumption calculation may cause huge wastage.

Computerized marker making system: To get the optimum efficiency of markers as well as to minimize fabric wastage they done marker by computerized marker making system (VEITH). It has the digitizer by which the patterns are make grade and with the help of the software as well get output as marker with the plotter. The VEITH system is discussed in below.



FIG: PLOTTER MACHINE

3.1.10 Procedure of CAD section:

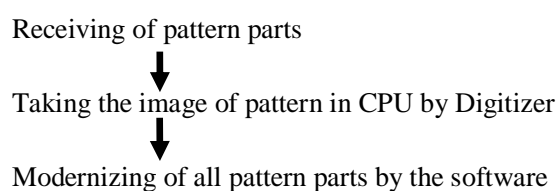
- ❖ In CAD section at first the pattern put on the digitizer to take clear image of the pattern part inside the CPU.
- ❖ After making all required size patterns using the software pattern parts are aligned in the mini marker. Then it is sent to CPU of CAM section for approval and checking the length & width of marker and pattern parts alignment.
- ❖ After getting approval from CAM section then



Fig: CAD Section

Printer is used to print out the whole real marker then this marker as well as mini marker are provided to the CAM section for cutting the fabric.

3.1.11 Working sequence of CAD section



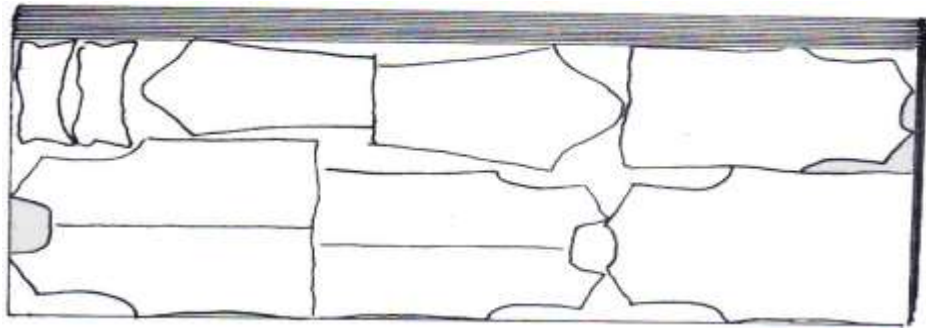
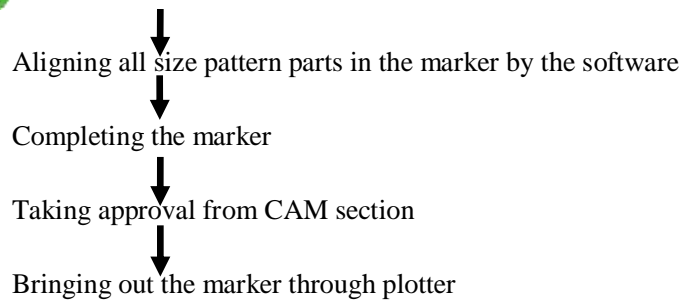
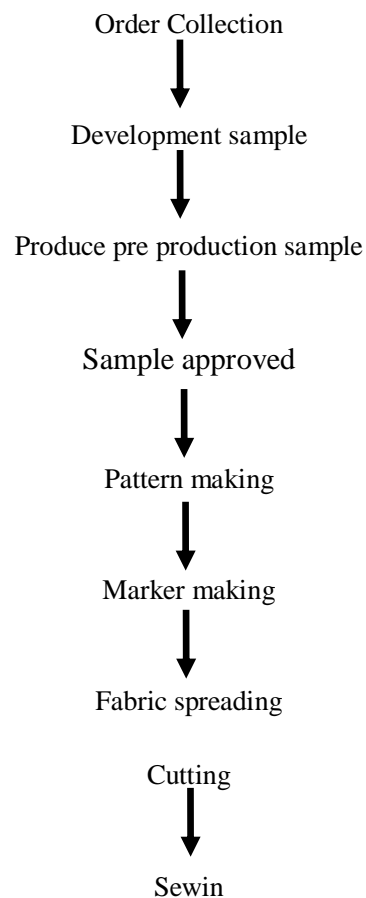
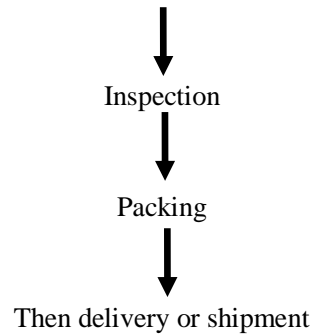


Fig: Computerized Marker Making

3.1.12 Sequence of operation for each product:





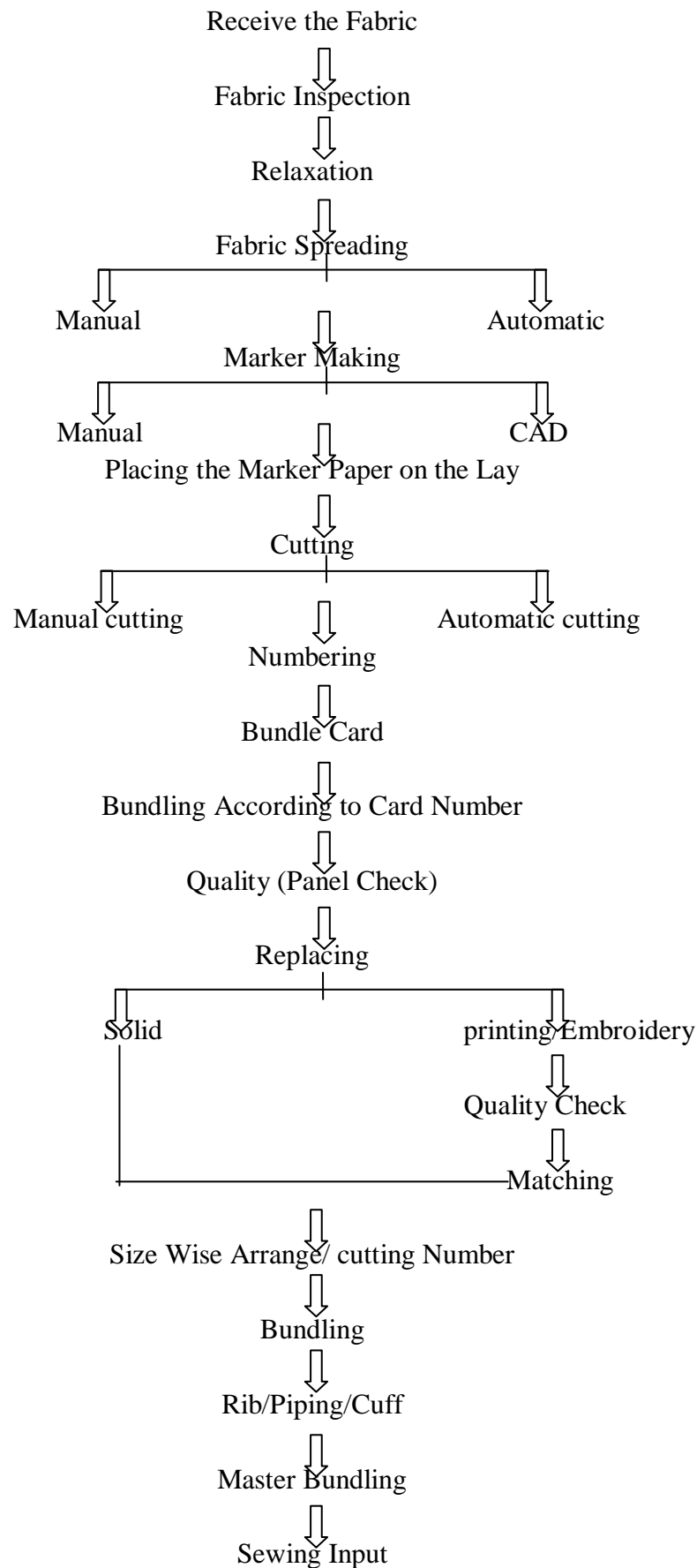
3.2 Cutting Section:

The definition of cutting is very complex. In garments industries fabric is cut from lay and spreading with accuracy and properly which is termed as fabric cutting. Marker outline is used to cut the fabric. Fabric cutting is very important as if something is cut in wrong way, cannot be rectified.



Layout of Cutting Section

3.2.1 Flow Chart of Cutting section:



3.2.2 Spreading

Spreading means the smooth laying out of the fabric in superimposed layers of specific length. The cutting marker paper is laid in the top of the fabric layer. During spreading number of the plies should be not more than three hundreds but it depends on the thickness of the fabric and the height of the cutting knife.

For example: if the thickness of the fabric is higher than the number of plies mentioned above would not valid and in case of straight knife cutting instrument the maximum lay height should be 70% of the blade height.

3.2.3 Ideal Lay height for cutting:

Fabric weight	Woven	Knits
Heavy weight	4-5"	5-4"
Med weight	3-4"	3-3.5"
Light weight	2.5-3"	2-2.25"

3.2.4 Requirements of fabric spreading:

Spreading must achieve a number of specific objectives:

1. Alignment of fabric plies
2. Correct ply tension
3. Elimination of fabric faults
4. Correct ply direction and adequate lay stability
5. Elimination of static electricity
6. Avoidance of fusion of plies
7. Avoidance of distortion in spread
8. Easy separation of the cut lay into bundles
9. Fabric must be flat
10. Matching checks or strips.

3.2.5 Spreading system in factory:

- ❖ Manual spreader group : 4 group
- ❖ Gerber Spreader : 3 pcs



Fig: Fabric spreading



Fig: Fabric cutting

3.2.6 Methods of Fabric Cutting:

Fabric cutting methods are as follows:

Manual Method:

- ❖ Scissor
- ❖ Straight knife
- ❖ Band knife
- ❖ Round knife
- ❖ Die cutting
- ❖ Notcher ,and
- ❖ Drill etc.

Computerized Method

- ❖ Straight knife cutting (GERBER Cutter)
- ❖ Water jet cutting
- ❖ Laser beam cutting, and
- ❖ Plasma torch cutting etc.

Cutting Section:

- ❖ Straight knife cutting machine : 16 pcs
- ❖ Cutting table : 6 pcs

Mainly two methods of manual cutting are used in factory

- ❖ Scissor
- ❖ Straight knife

Features of Scissor

- ❖ It is the first and oldest method of fabric cutting.
- ❖ This is used for cutting one or two plies of fabric.
- ❖ It can be cut the fabric accurately by proper caring.
- ❖ Separate systems are available to cut the fabric from left to right or right to left.
- ❖ Most of the fabrics can be cut by scissor. But it needs more time to cut the fabric and contains high cost.
- ❖ For these reasons there is limited use of hand operated scissor.
- ❖ Hand operated scissor are available in tailoring and household purpose to cut the fabric.

3.2.7 Different Types of Cutting Machine:

Straight knife cutting machine

Machine name: K.M company cloth cutting m/c

Model: K.M KS_AUV

Producer: made by K.M cutting m/c co, JAPAN

Typ : Heavy duty industrial cloth cutting m/c self

Sharpening

Dimension: 8 inch width * 11 inch length * 24 inch height

Weight: 33.5 lb

Current: A.C (3.3/2.6 amps)

Speeds: 3000/3600



Fig: Straight knife cutting machine

Machine parts

- Base plate
- Terminal block
- Plug
- Clamp washer
- Pressure foot
- Blade
- Sharpener pulley
- Pulley spring
- On/off switch

Features of Straight knife cutting machine

- ❖ Possible to cut pattern pieces directly from the fabric lays
- ❖ Could be used to cut for higher depth of fabric
- ❖ High cutting speed
- ❖ Sharp and heavy corners can be cut
- ❖ Blade could be sharpened by attaching grinding facilities
- ❖ Blade height 10 to 33 cm
- ❖ Blade stroke 2.5 to 4.5 cm
- ❖ Special attachment such as sew edge or serrated edge can be provided for heavy fabric such as canvas or denim.



Advantages of straight knife

- ❖ Comparatively cheap and can be transferred easily from one place to another.
- ❖ Higher lay of height can be cut very easily.
- ❖ Round corners can be cut more precisely than even round knife.
- ❖ Production speed is very good as up to 10 heights can be cut at a time.
- ❖ Garment components can be directly separated from fabric lays.
- ❖ Fabric can be cut from any angle.

Disadvantages of straight knife

- ❖ Sometimes deflection may occur due to the weight of the motor.
- ❖ Knife deflection is high in risk, when lay height is too high
- ❖ Sometimes accident may happen.

Computerized Straight knife cutting (GERBER Cutter)

Fabric Height	→	7.2 cm 2.83 in
Throughout put-average	→	8m/min 315 in/min
Cutting Speed	→	30.5 m/min 1200 in/min
Head acceleration	→	2.4m/sec ² 1/4g
Table Weight	→	4511 kg 9947 lbs
Control power	→	3 wire 200V-240V, 1 PH,50-60Hz
Table Vacuum	→	380/440V, 50/60 Hz
Average Energy Consumption	→	17KWh to 20KWh
Compressed Air Consumption	→	85 liters/min @6.8 bar
Temperature	→	43°C 110° Fahrenheit
Vacuum	→	up to 760m above sea level
Noise	→	80 DBA

Features of Computerized Straight knife cutting (GERBER Cutter)

- ❖ This method provides the most accurate possible cutting at high speed.
- ❖ Marker is not necessary to put over the fabric lays during cutting.
- ❖ Cutting knife is oval shaped and very hard. Sharpness is also very and blade is made of stainless steel.
- ❖ Cutting knife itself moves according to the direction of computer memory.
- ❖ This machine is CAM system machine and works through CAD system.



Machine description or Working Principle

- ❖ Cutting table is perforated.
- ❖ Table is covered with nylon bristles which are flexible enough to permit penetration and movement of knife blade which supported only at top.
- ❖ A sheet of air light polyethylene covers the top of the lay which assists the creation of a vacuum and allows significant compression of the lays.
- ❖ Cutting head is placed in a beam which is set width wise of the table and cutting head moves length wise of the beam according to the direction of computer head.
- ❖ A controlled cabinet house the computer and the electric components are required to drive the cutter and motor.



- ❖ After loading the disc into the computer, the operator positions the cutting heads origin right over the corner of the spread; this provides the computer with a reference point.
- ❖ Since the computer controlled knife cuts according to the instruction from the computer rather than by following a pattern line drawn on a marker, it gives accurate dimension.

Advantages of Computerized Straight knife cutting

- ❖ Very fast cutting operation
- ❖ Very active cutting by computer controlled system.
- ❖ Suitable for very large scale production.
- ❖ Speed of cutting can be controlled.
- ❖ Cutting defects are less than others.
- ❖ Cutting knife can be driven at any direction.
- ❖ Can be compressed in lays which assist during fabric cutting.
- ❖ Intensity of accident is low.
- ❖ No need of marker.
- ❖ Fabric can be cut 6-8 times than manual method.
- ❖ Less labor cost.

Disadvantages of Computerized Straight knife cutting

- ❖ Very expensive machine.
- ❖ Higher maintenance cost.
- ❖ Skilled manpower is required.
- ❖ If correct disc is not loaded in the computer, errors will be indicated.

3.2.8 Cutting Section Quality Control:

Step by step process by which we check quality in the Cutting Section.

Quality Inspection for Marker:

- ❖ Every parts Measurement check,
- ❖ Calculate the total no. of parts of each Garments,
- ❖ Marker length & width determined.

Fabrics Roll spreading Inspection:

- ❖ Roll number,
- ❖ GSM,
- ❖ No. of lays,
- ❖ Ends of Bits
- ❖ Shade number,

Spreading Quality Control (Defects):

- ❖ Table marking,
- ❖ Counts,
- ❖ Remnants,
- ❖ Fabrics flaws,
- ❖ Marker placing.
- ❖ Splices or Joints,
- ❖ Ends,
- ❖ Leaning,
- ❖ Tension,

During Cutting Quality Control:

- ❖ Notches,
- ❖ Miscut,
- ❖ Matching plies,
- ❖ Ragged Cutting,
- ❖ Pattern Check

3.2.9 Cutting Numbering Process:

In this stage sticker is attached with all part of cutting part for shade matching. The sticker number maintains cutting number, size number, serial number.

Numbering section

- ❖ Striker machine : 13pcs

Prepared the bundling card

Prepare bundling card according to fabric lay report this card maintain

- ❖ Date
- ❖ Style No
- ❖ Size Number
- ❖ Card Serial
 - ❖ Quantity
 - ❖ Color
 - ❖ Lot Number

Bundling according to card No.

In this stage all number parts are bundled according to serial number.

Quality Check (Panel check)

- | | |
|----------------|------------------|
| a) Oil spot | e) Foreign yarn |
| b) Dirty spot | f) Slub |
| c) Crease mark | g) Contamination |
| d) Needle mark | h) Hole |

Then same numbers of sticker are matched fold & bundled.

After cutting store

All bundles are put in the input rack then send to sewing section.

3.2.10 Limitation Of Cutting Section:

1. Input problem
2. There is may be no group for any table
3. Preparing the bundle cards by writing on a piece of fabric
4. Check, variegated rib fabric lay quantity may be excess. As a result reject percentage may be increase.
5. Fabric spreading

3.3 Sewing

The process of joining of fabrics by the use of needle and sewing thread or by other techniques is called sewing.

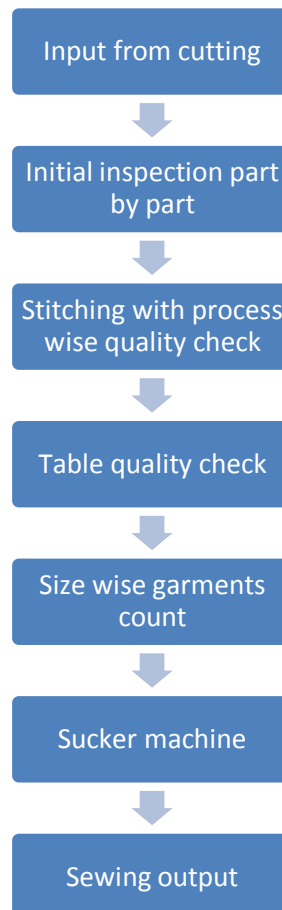
Lay out of sewing floor:



Element of sewing:

- ❖ Sewing thread
- ❖ Needle and
- ❖ Sewing machine

3.3.1 Flow chart of sewing section:



3.3.2 Sewing thread:

Almost all garments produced have one component in common, the sewing thread. Whilst sewing thread is usually a relative a small percentage of the cost of garments, it has an extremely significant influence on the appearance and durability of the finished product, the production of sewing thread is an extensive and complex subject.

Sewing thread used in factory

- ❖ Cotton
- ❖ Flaming thread
- ❖ Elastic thread
- ❖ Lorex thread

3.3.3 Sewing needle:

A sewing needle is long slender tool with a pointed tip. The first needles were made of bone or wood, modern ones are manufacturing from high carbon steel wire, nickel or gold plated for corrosion resistance. The highest quality embroidery needles are made of platinum. Needle size is denoted by a number on the packet. The convention for sizing is that the length and thickness of a needle increases as the size number decreases. For example, a size 1 needle will be thicker and longer, while a size 10 will be shorter and finer. The action of needle has a direct effect on seam strength and garments performances.

Function of a needle: The functions of a sewing needle are -

- ❖ To produce a hole in the material for the thread to pass through without causing any damage to material.
- ❖ To form a loop that will be picked up by the hook of bobbin case.
- ❖ To pass the needle thread through the loop formed by the looper mechanism on machines other than lock stitch.

Parts of a Sewing Needle

The different parts of a needle and their functions are mentioned below:

Butt

It is the truncated conical shape at the top end of the needle which is needed to attach the needle with needle bar or clamp.

Shank

Shank is the upper part of the needle which locates within the needle bar. It may be cylindrical or flat at one side.

Shoulder

Shoulder is the section intermediate between the shank and the blade.

Blade

It is the longest portion of the needle from the shoulder to eye. This part is responsible for the most amount of friction between needle and fabric.

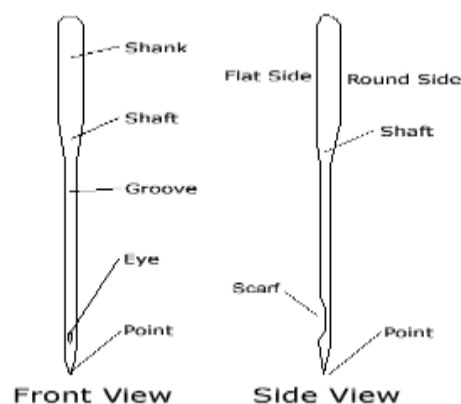


Fig: Needle parts

Long Groove

There is a fine slot in the needle from its shoulder to eye. The needle thread remains at this slot when the needle penetrates the fabric and goes up and down.

Short Groove

Short groove is the slot on the side of the needle towards the hook or looper. It assists in forming the loop of needle thread.

Eye

Needle eye is a hole at the tip of the needle through which the sewing thread passes. It prevents the sewing thread from damage during sewing.

Scarf

Scarf or clearance cut is the portion across the whole faces of the needle just above the eye. Its purpose is to enable a closer setting off the hook or looper to the needle.

Point

It provides the best penetration of material according to its nature and the appearance that has to be produced.

Tip

Tip is the keen extreme end of the point.

3.3.4 Sewing machine:

Types of sewing machine

- ❖ Plain m/c (S/N)
- ❖ Double needle m/c (D/N)
- ❖ Overlock m/c
- ❖ Flat lock m/c
- ❖ Kanshai m/c
- ❖ Button hole m/c
- ❖ Button join m/c
- ❖ Bartake m/c
- ❖ Cylinder bed m/c
- ❖ Flat bed m/c

3.3.5 Thread used in different Machine:

Machine type	Thread type
Plain/ Auto plain m/c	1 needle thread 1 bobbin thread
Double needle m/c	2 needle thread 2 bobbin thread
Over lock m/c 2 needle	2 needle threads 2 looper thread
Cylinder bed m/c	3 needle thread 1 spreader thread

Flat bed m/c

1 looper thread

3 needle thread
1 spreader thread
1 looper thread

3.3.6 Different Sewing Machine:

Name of m/c: Plain machine.

Brand name: Juki.

Origin: Japan.

Model: DDL-9000 SS

Needle type: DB×1

Stitch type: Lock stitch.

Motor type: servo motor.

Rpm: 400-4000



Name of m/c: Overlook machine.

Brand name: Juki.

Origin: Japan.

Model: MO-3914, TO-42.

Needle type: DC×1, DC×11, DC×14.

Stitch type: Chain stitch.

Motor type: Servo motor.

Rpm: 400-8000.



Name of m/c: Flat lock machine.

Brand name: Juki.

Origin: Japan.

Model: MF-7823, U-10-B-56.

Stitch type: chain stitch.



Motor type: clutch motor.

Rpm: 2600.

Name of m/c: Button hole machine.

Brand name: Juki.

Origin: Japan.

Model: LBH-1790SS

Needle type: DP×5

Stitch type: lock stitch.

Stitch design: 19.

Rpm: 400-8000



Name of m/c: Button attach machine.

Brand name: Juki.

Origin: Japan.

Model: LK-1903A-SS.

Needle type: DP×5, DP×17.

Stitch type: lock stitch.

Needle: 01.

Rpm: 400-2700.



Name of m/c: KANSAI (special).

Brand name: Juki.

Origin: Japan.

Needle: Maximum 11.

Needle type: UO×128

Stitch type: Chain stitch.

Motor type: Clutch motor.

Rpm: 260



3.3.7 Different types of sewing:

Stitch Name: Single thread blind stitch

ISO Stitching Code number: 103 (Blind Stitch)

Use in process: Blind hem, belt loop etc.



Face View

Stitch Name: Lock Stitch (it is the most common stitch)

Face View

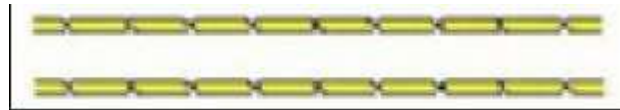


Back View (bobbin thread)

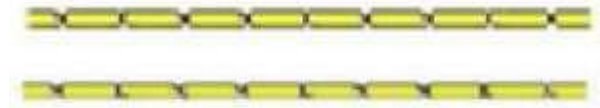


Stitch Name: Double needle Lockstitch

Face View



Back View (bobbin thread)



Stitch Name: Zig Zag Lockstitch

Face view



Back View



Stitch Name: Chain stitch

Face View

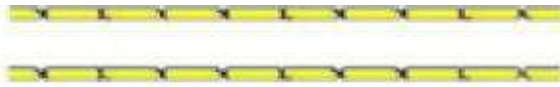


Back View (Looper Thread on bottom)

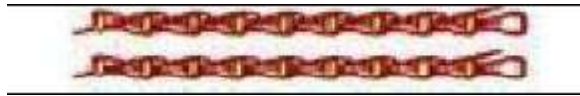


Stitch Name: 2 needle chain stitch

Face View



Back View (double looper thread on bottom)



Stitch Name: Two needle cover stitch

Face View

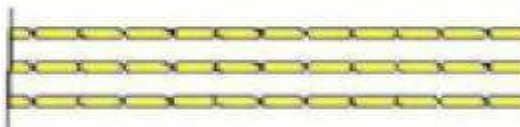


Back View (Looper thread)



Stitch Name: Three needle cover stitch

Face View



Back View



Stitch Name: Three Thread Over edge

Face View



Back View



3.3.8 Layout of a T-shirt:

Shoulder join



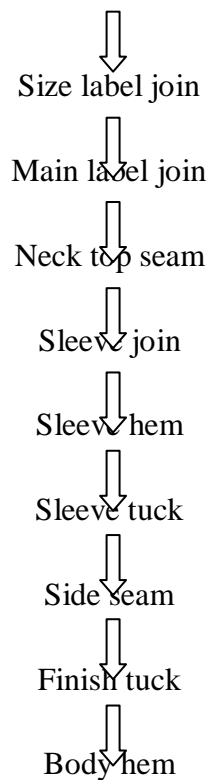
Rib tuck



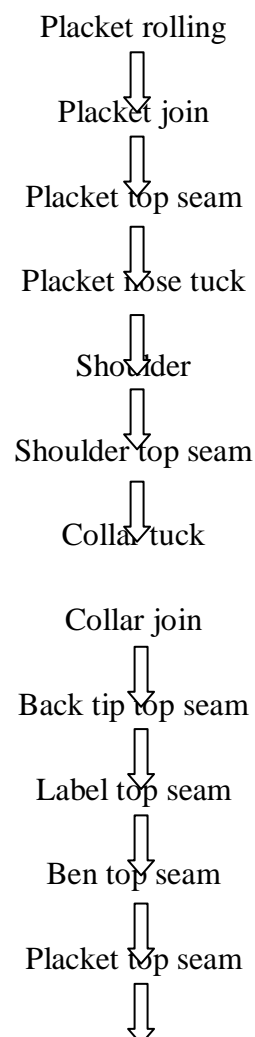
Neck join



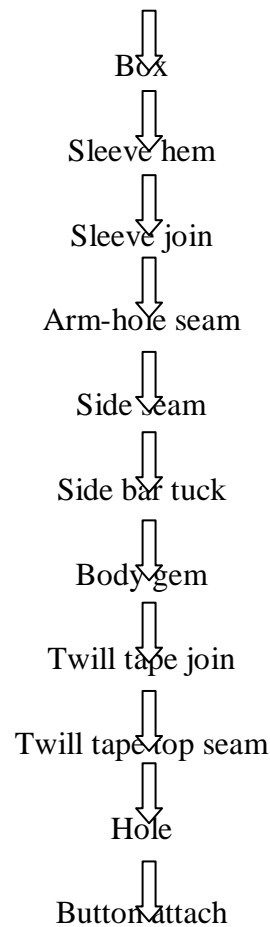
Neck piping



3.3.9 Layout of a polo shirt:



Placket 1/60 top seam



3.3.10 Sewing Quality checking points:

- ❖ Skip/Drop/Broken stitch
- ❖ Raw edge
- ❖ Size mistake
- ❖ Uneven hem
- ❖ Uneven cuff
- ❖ Uneven neck
- ❖ Uneven shoulder
- ❖ Uneven placket
- ❖ Uneven pocket
- ❖ Twisting
- ❖ Without care label
- ❖ Open tack
- ❖ Sleeve up-down
- ❖ Stripe up- down
- ❖ Open seam
- ❖ Four point up-down
- ❖ Shading etc

3.3.11 Sewing Line quality Check List:

1. Buyer Approved Sample & Measurement Sheet Check.
2. Sample Wise Input Check.
3. Buyer Approved Trims Card Check.
4. Buyer Approved Sample Wise Style Check.
5. All Machine Thread Tension Check.
6. Style Wise Print & Embroidery Placement Check.
7. All Process Measurement Check.
8. All Machine Oil Spot Check.
9. All Process S.P.I Check as Per Buyer Requirement.
10. Input Time Shading, Bundle Mistake & Size Mistake Check.
11. Buyer Approved Wise Contrast Color Check.
12. As per Buyer Requirement Wise Styling Check.
13. All Machine Stitch Tension Balance Properly.

3.3.12 Sewing Table Quality Check List:

1. Style Wise Garments Check.
2. All Process Measurement Check..
3. Front Part, Back Part, Sleeve & Thread Shading Check.
4. S.P.I check for all process.
5. Print/Embroidery Placement Check.
6. Main Label, Care Label, Size Label & Care Symbol Check.
7. Size Mistake Check.
8. All Process Alter Check.
9. Any Fabric Fault /Rejection Check.

3.3.13 Sewing Defects:

- ❖ Needle damage,
- ❖ Skip stitches,
- ❖ Thread Breakages,
- ❖ Broken Stitches
- ❖ Seam Grin
- ❖ Seam Puckering
- ❖ Pleated Seam

3.3.14 Sewing problems in “factory”:

- ❖ Input problem
 - ❖ Shortage of skilled operator
 - ❖ To achieved the overtime, they worked slowly
1. If any problem will create during production then
 - ❖ Nobody will take the responsibility,
 - ❖ Nobody will give the instant decision.

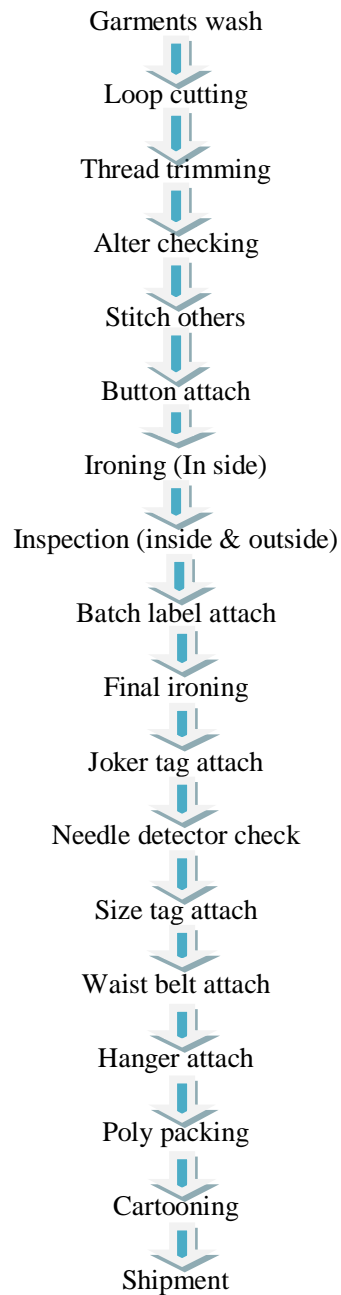
2. Sewing line production may be depends on in charge.
3. Needle hole- due to friction, needle eye is to large, mistake of needle selection.
4. Measurement problem- from cutting section
5. Seam pucker
 - ❖ Due to unequal tension of feed dog and pressure foot on two plies of fabric.
 - ❖ Due to unequal thread tension.
 - ❖ Shrinkage of either fabric or sewing thread.
6. Broken stitch
 - ❖ Due to tension variation between needle & bobbin thread.
 - ❖ Tension of needle thread is more.
 - ❖ Low quality sewing thread.
 - ❖ Needle heating or hook heating.
 - ❖ Sharp edge of throat plat, hook plate, bobbin cage, needle groove etc.
 - ❖ Faulty fitting of bobbin cage.
 - ❖ Sharp edge of bobbin cage, looper eyes and spring.
7. Skipped/ Slipped stitch
 - ❖ If the timing between needle & looper or bobbin is not proper. Needle thread loop is not picked up by bobbin thread loop when required.
 - ❖ If the loop of needle becomes smaller in size, slipped stitch occurs.
 - ❖ Unequal tension between sets of threads.
 - ❖ Deflection or vibration of needle.
8. Variable stitch density
 - ❖ If fabric cannot move forward properly due to lack of pressure of pressure foot.
 - ❖ Due to faulty feed mechanism.

3.4 Garments Finishing Section

3.4.1 Introduction:

Finishing is the final steps of Garments processing technology. A textile products either it is dye or printed it needs to add some finishing feathers before marketing.

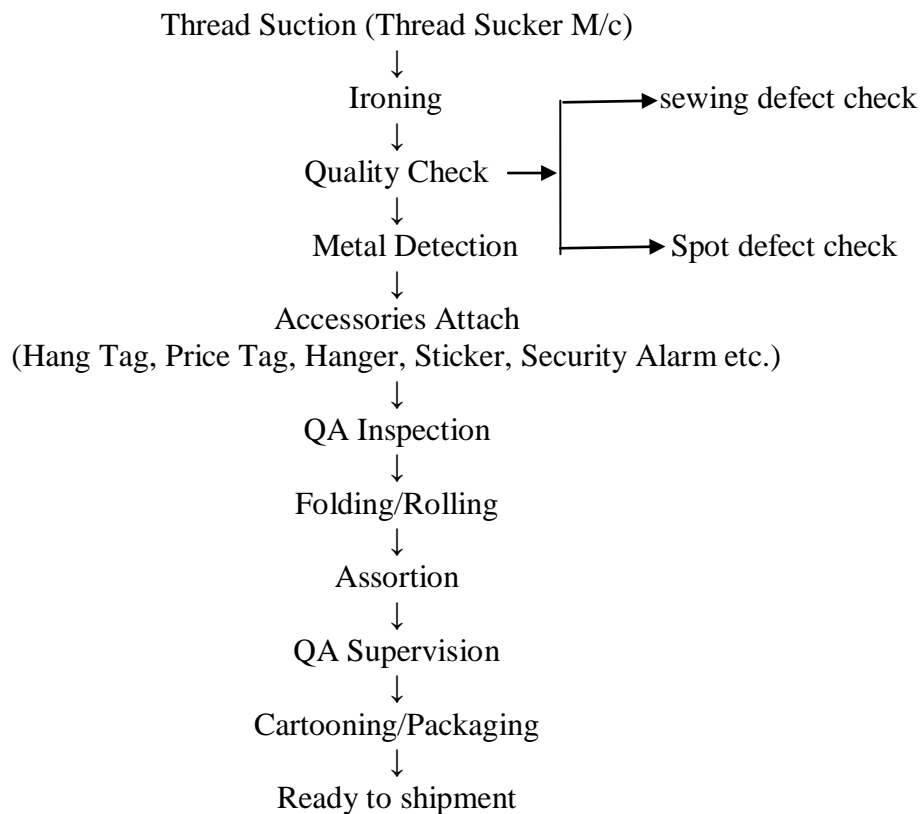
3.4.2 Finishing Lay Out:



3.4.3 Garments Finishing:

Garment finishing through wet processing is responsible for adding beauty to the garment. Proper finishing could provide better look to the garment, change the feel of the fabric and bring about a change to the texture of the fabric. There are various types of finishes like peach finish, anti-microbial finish, wrinkle free finish, aroma finish, UV guard finish, acid wash, enzyme wash, etc.

3.4.4 Process Flow Chart of Garment Finishing:



3.4.5 Object of Finishing:

- ❖ To enhance the suitability of the fabric for end use.
- ❖ To improve appearance and sale appeal for comfort and utility.

To give desirable qualities to the fabric like-

1. Softness
2. Luster
3. Drape
4. Dimensional stability
5. Crease recovery
6. Soil repellence

3.4.6 Work flow in the Finishing Room:

As mentioned earlier, workflow in the Finishing Department is shown here for reference:

- ❖ Eliminate micro-dust and residual thread from the garment;
- ❖ Press/iron garments as specified by buyer or as per requirements;
- ❖ Fold the garments as required by customer;
- ❖ Fix necessary tickets (Price tickets) or tags (hang tags),etc to the garments at this stage;
- ❖ Insert garments into poly bags;
- ❖ Divide garments as per size and color (assortment);

3.4.7 Machine Description of finishing section (BGL & BDL):

Machine	Number
1. Heat Iron	06
2. Steam iron	029
3. Metal detector	02
4. Neck press	02
5. Thread sucker	03

Finishing capacity: 1000 pcs/hr(approximately)

Metal detection machine:



Fig: Metal Detector M/C(Brand name: HASHIMA)

Thread sucker machine:



Fig: Thread Sucker M/C

3.4.8 Materials used in garment finishing:

- ❖ Neck board
- ❖ Back board
- ❖ Collar stand
- ❖ Butterfly
- ❖ Tie placket support
- ❖ Danishing loop
- ❖ Fit label
- ❖ M-clip
- ❖ T-clip
- ❖ Metal clip
- ❖ Cuff link
- ❖ Droop loop
- ❖ Cable tie
- ❖ Boa tie
- ❖ Full board
- ❖ Hand tag
- ❖ Tag pin
- ❖ Tissue paper
- ❖ Al pin
- ❖ Ball pin
- ❖ Elastic clip
- ❖ Hanger
- ❖ Poly bag
- ❖ Size sticker

The General Rules of Spot Removing:

1. The longer a stain remains, the tougher it is to remove.
2. Always treat a stain before laundering.
3. Blot gently — never rub; and don't ever blot with hot water.

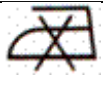
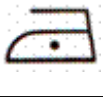


Stain Removal:

STAIN TYPE	USED CHEMICAL (COMMERCIAL NAME)
1. Oil stain	Spot lifter
2. General stain	Thinner
3. Termeric stain	MRS
4. Ink stain	MR
5. Glue stain(Polymer based)	Heat gun
6. Rust stain	Markvill
7. Print mark	Printvill

3.4.9 Ironing:

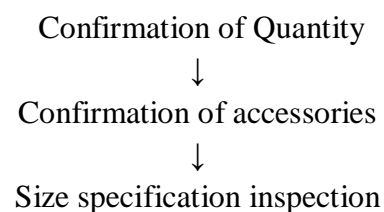
Ironing is the use of a heated tool (an *iron*) to remove *wrinkles* from fabric. The heating is commonly done to a temperature of 180–220 °Celsius, depending on the fabric. Ironing works by loosening the bonds between the long-chain *polymer molecules* in the fibers of the material. While the molecules are hot, the fibers are straightened by the weight of the iron, and they hold their new shape as they cool. Some fabrics, such as cotton, require the addition of water to loosen the intermolecular bonds.

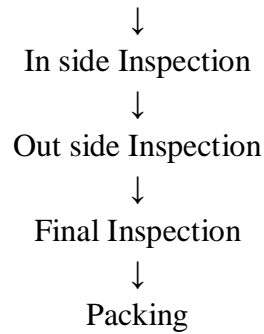
Basic Ironing Symbols:

	Do not iron
	Cool iron (110°)
	Medium iron (150°)
	Hot iron (200°)

Garment Inspection:

Flow Chart of Garment Inspection





3.4.10 Trims:

Trims cover all the items used in the garment except the basic fabric. There are hundreds of items used to manufacture the garments. Proper selection of trims and its quality are very important for styling; otherwise the garment may be rejected or returned by the customers.

Following is a part of list that covers some names of the items:

Zipper/Fastener:

- Teeth : Nylon, Vislon, Metal
- Color : Tape color, Teeth color
- Size : #3, #5, #8, etc.
- Length: As per requirement 18 cm, 72 cm
- End : Close End (C/E), Open End (O/E)
- Slider : One way, Reversible.

Sewing Thread:

- ❖ Shade, color fastness, etc.
- ❖ Tensile strength, Elasticity, Shrinkage, Moisture Regain, Abrasion Resistance, etc.
- ❖ 30s, 60s, 20/2, 40/9 Ne, etc.

Labels:

- ❖ Main label
- ❖ Size label
- ❖ Care label
- ❖ Content
- ❖ Price
- ❖ Patch, etc.

Button:

- ❖ Horn and
- ❖ Metal buttons are very common in use.
- ❖ ELASTIC:
- ❖ Cotton
- ❖ Polyester, etc.

Eyelet:

- ❖ Antique
- ❖ Matching, etc.

Velcro:

- ❖ Hook and Pile

String/Cord:

- ❖ Cotton
- ❖ Polyester, etc.

Tags:

- ❖ Price tags
- ❖ Hang tags, etc.

Polybag:

- ❖ Strength, Chemical mixture, Thickness (micron/mm; 1mm = 1000 micron).
- ❖ Blister Bag:
- ❖ 0.05 mm in thickness;
- ❖ Loaded capacity is higher than poly bag.

Carton:

- ❖ 3 ply
- ❖ 5 ply
- ❖ 7 ply Size (L, W, and H).

Sticker:

- ❖ Hook and Pile.

Plastic Clip**Tag pin****Scotch Tape****Hanger****Gum Tape****Etc.**

3.5 Quality Section

3.5.1 Quality Policy

It is the policy of **Cotton Club (BD) Ltd.** to produce quality dyed knit fabrics that meet or exceed customers expectations & needs. To implement this policy the top management of **Cotton Club (BD) Ltd.** Is committed to provide adequate resources in terms of good raw materials and trained personnel & continually improve / upgrade its processes and systems.

3.5.2 Quality objectives

- ❖ Overall material/product loss (Level of rejection) for the company during the production process (in a year) shall not exceed 1.5 %
- ❖ Defects during dyeing & knitting operations to reduced by 10% .
- ❖ Process capability shall be maximized by maximizing the m/c breakdown time. M/c breakdown time should be reduced to 20 % from its current status/position
- ❖ To ensure better work environment for the personnel working in the organization.

3.5.3 Machines Required

- ❖ Wash Fastness Tester
- ❖ Light fastness tester
- ❖ Rubbing fastness tester
- ❖ Electronic balance
- ❖ G.S.M. cutter
- ❖ Fabric inspection table
- ❖ Light box
- ❖ Shrinkage (%) meter.

3.5.4 Inspection Area

- ❖ Shade match of fabric
- ❖ Fabric diameter
- ❖ Wash fastness
- ❖ Light fastness
- ❖ Rubbing fastness
- ❖ Faults: Dyeing faults

3.5.5 Faults Found in QC Department

Dyeing faults:

- ❖ Uneven shade
- ❖ Running shade
- ❖ In fastness property

Finishing faults:

- ❖ GSM variation
- ❖ Spirality
- ❖ Shrinkage control: Length wise

3.5.6 Quality Assurance System

Quality assurance system can be divided into following steps:

1. On line Quality assurance system and
2. off line Quality assurance system.

Again on line Quality assurance system can be divided into the following steps:

- (a) Raw material control.
- (b) Process control.

3.5.7 Online Quality control:

Raw material control: Cotton Club(BD) Ltd. always very concern about the quality of the product. So, they knit grey fabric from the best quality yarn & utilizes technical evaluation in every stage of the production, as we know the quality product depends on the raw material quality.

Process control: The method chosen for process must be provided with the necessary accurate parameters. In the every stage pH should be maintained sincerely.

3.5.8 Off line quality control:

After dyeing the material is received by the finishing section. Before receiving the following things are checked:

1. Shade condition.
2. Wash fastness.
3. Condition of softening.
4. Condition of enzyme wash.

Before delivery the finished fabric to the customer it should be passing against the requirements. The following tests are done-

1. GSM check.
2. Shrinkage test.
3. Shade check.
4. Rubbing test.
5. Wash fastness test.
6. Color fastness to perspiration.

3.6 Merchandising Section

3.6.1 Merchandising:

This chapter deals Merchandizing Department. It gives some information of merchandizing, then it discusses about the requirement of different materials of making garments. It ends with the recent price of different knitted fabric.

3.6.2 Merchandising department:

Merchandising department is the star of the department among all the working departments in the Export concern, because Merchandising is the only department having maximum control over the departments and total responsible for Profit and loss of the company.

After LPG (Liberalization, Privatization & Globalization) the business gets more important and now merchandising is on its hot seats. So, it is necessary to understand the day to day happenings of the star department.

Merchandise- means goods bought and sold; and trading of goods.

Merchandising- is an activity of selling and promoting the goods.

Merchandiser in garment industries:

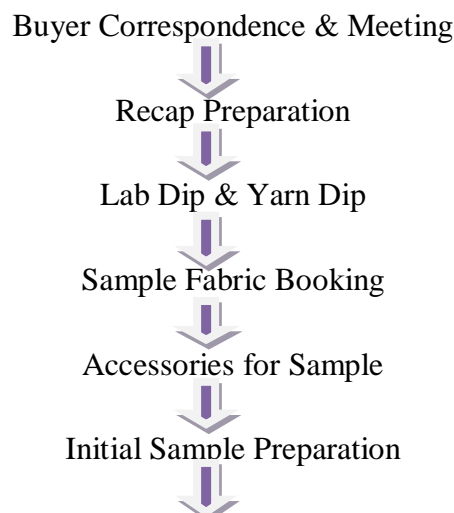
In the field of marketing and services, Merchandiser is at a position of utmost importance, He is the person who co-ordinates with various departments for a uniform business.

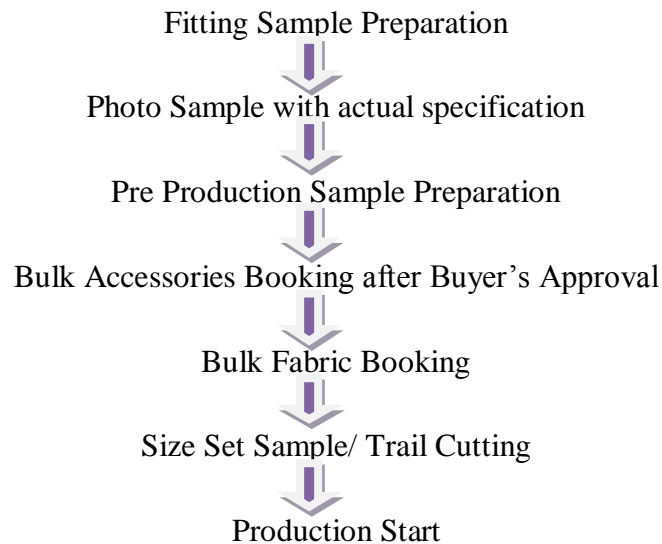
Objects of Merchandising

Merchandising denotes all the planned activities to execute and dispatch the merchandise on time, taking into consideration of the 4 Rs to replenish the customer.

- ❖ **Right Quantity:** To dispatch right quantity of product what buyer ordered?
- ❖ **Right Quality:** It should be with right quality as accepted both parties.
- ❖ **Right Cost:** Everybody wants more from what they are paid.
- ❖ **Right Time:** No one wants to wait idle even in a Restaurant. Keeping delivery schedule is mandatory.

3.6.2 Flow Chart of Garments Merchandizing:





3.6.3 Merchandising Calculation:

Fabric or Body Calculation:

- ❖ $(\text{Body length} + \text{Sleeve length} + \text{Allowance} \times \text{Chest} + \text{Allowance} \times 2 \times \text{GSM} / 10000000) \times 12 \times 10\% (+)$
= Result kg./dozen.

NB:

- ❖ $\text{BL} + \text{SL} + \text{Allowance} = 10 \text{ cm. Allowance.}$
- ❖ When keep the chest allowance then body width, chest width and bottom width which is big (cm) with (4 cm+) Added.
- ❖ 10% overall Process Loss.
- ❖ 1 dozen = 12 pcs.

Body Consumption By Marker:

- ❖ $\text{Length} \times \text{width} \times \text{GSM} \times 12 / 1000 / 1550 / \text{Ratio} \times 12\%$

Dia Measurement:

- ❖ $\text{Chest or Bottom} + \text{Allowance} / 2.54$
= Dia / Result

NB:

- ❖ 1 inch = 2.54 cm
- ❖ When I dia measurement then chest or bottom with (4-6 cm) allowance added.

Self Or Rib Fabric Neck Dia Measurement:

- ❖ $\text{Neck opening or Width} + \text{Neck drop} \times 2 / 2.54$
= Result.

Pant & Trouser Or Pajama Consumption:

- ❖ $(\text{Length} + \text{Allowance} \times \text{dia} \times 2 \times \text{GSM} / 10000000) \times 12 \times 10\%(+)$
= Result kg. / Dozen.

NB:

- ❖ $L + \text{Allowance} \#$ with self fabric waist minimum (12 cm) Allowance added.
- ❖ Without self fabric waist minimum (8 cm) Allowance added.

- ❖ Allowance minimum 15 cm added with Hip or Dia.
- ❖ $DIA = Hip + Allowance / 2.54$

NB:

- ❖ 1 inch = 2.54 cm.

Pocket Consumption:

- ❖ Length + Width + Allowance.

NB:

- ❖ Allowance minimum 5 cm added with (L+ W).

Carton Dimention:

- ❖ $Length + Width + Allowance \times Width + Height + Allowance \times 2 / 10000$
= Result / SQM.

NB:

- ❖ $L + W + Allowance = 6$ cm.
- ❖ $W + H + Allowance = 3$ cm
- ❖ 2 = Double part.

Button Liner (Find Out Formula):

- ❖ 1 GG = 144 Dozen.
- ❖ 1 GG = 1728 pcs.
- ❖ $Liner = Button Dia / 0.61$
= Result / liner.

NB:

- ❖ Always Button liner is plural number.
- ❖ As like 16,18,20,22,24

Yarn Booking:

- ❖ Fabric yarn (kg) + Process Loss.
= Result / kg.

NB:

- ❖ Process loss keep the 10% added with total fabric.

Sewing Thread Consumption:

- ❖ Cone Quantity = per garments thread x garments qty. x qty. in cone.
- ❖ Plain Machine : 1” for 2.75”
- ❖ Over lock (3 Thread) : 1” for 14.5 “
- ❖ Over lock (5 Thread) : 1” for 18.5”
- ❖ Flat lock (3 Thread) : 1” for 13.5”
- ❖ Flat lock (4 Thread) : 1” for 16”
- ❖ Picot : 1” for 21”
- ❖ Zigzag : 1” for 22”
- ❖ Kanchai Machine : 1 “ for 11”

Calculation Cubic Meter (Cbm):

- ❖ $CBM = Carton length \times Carton width \times Carton height \times Carton Qty. / 1000000$
= CBM / Result.

NB:

- ❖ 100 cm x 100 cm x 100 cm = 1000000

- ❖ 20 Feet = 28-31 CBM
- ❖ 40 Feet = 56-62 CBM

Marker Consumption (Formula):

- ❖ Open Dia = Marker length x 2.54 x Marker width x 2.54 x GSM / 10000000 / Marker Pcs x 12 x 10% (+).
= Result kg. / Dozen
- ❖ Tube Dia = Marker length x 2.54 x Marker width x 2.54 x GSM / 10000000 / Marker Pcs x 12 x 10% (+).
= Result kg. / Dozen

3.6.4 Price of Different Knitted Charge:

Jersey	\$ 0.15
Jersey with elasthan	\$ 0.35
Y/D jersey	\$ 0.25 (feeder stripe) 1.76 (auto stripe)
Y/D jersey with elasthan	\$ 0.45 (feeder stripe) 2.00 (auto stripe)
1x1 rib	\$ 0.18
1x1 rib with elasthan	\$ 0.38
Y/D 1x1 rib	\$ 0.25 (F.S)
Y/D 1x1 rib with elasthan	\$ 0.40 (F.S)
2x1 rib	\$ 0.25
2x1 rib with elasthan	\$ 0.45
Y/D 2x1 rib	\$.30 (feeder stripe)
Y/D 2x1 rib with elasthan	\$ 0.48
Pique	\$ 0.25
Pique with elasthan	\$ 0.45
Y/D pique	\$ 0.35 (feeder stripe) 1.76 (auto stripe)
Y/D pique with elasthan	\$ 0.50 (feeder stripe) 2.00 (auto stripe)
Interlock	\$ 0.35
Interlock with elasthan	\$ 0.50
Y/D interlock	\$ 0.40 (feeder)
Y/D interlock with elasthan	\$ 0.55 (feeder)
Terry	\$ 0.40
Terry/lycra	\$ 0.50

3.7 Marketing Section

3.7.1 Marketing Activities:

This chapter deals with the marketing activities, marketing plans, and responsibilities of marketing personnel of Cotton Club (BD) Ltd.

3.7.2 Manpower:

Marketing plays a vital role in the field of displaying/ showing the good criteria of the products to the buyer & to communication with the buyer. There are about 7 peoples in the marketing section of the industry.

Importing countries:

Following countries mainly imports products from CCL through many internationally well recognized buyers.

- ✓ Europe countries like UK, France, Germany, etc
- ✓ USA

3.7.3 Marketing strategy:

Marketing strategy is a very important factors to sale the products to the buyers. If the Marketing strategy is not so developed, it will be very hard to reach the goal. In case of garments marketing the dealings with the buyer is a very important factor.

In CCL mainly General Manager, Marketing Executives, Merchandisers & higher officials deal with the buyer. There is some fixed buyer of the industry. The buyer gives their orders continuously all over the year. The marketing officers & the merchandisers communicate with the buying houses to collect the orders. By both side understanding the rate & the order quantity are fixed.

3.7.4 Product label:

There are following labels used by this mill:

- 1) Care Label: It contains washing in hot or cold water, chemical cleaning, drying conditions etc.
- 2) Size Label: It contains size of garments.
- 3) Composition Label: It contains the fabric composition of different fibre type.
- 4) Decorative Label: Decoration is as buyer or consumer choice wise.
- 5) Flag label: it indicates importing country.
- 6) Barcode label: it indicates hidden identity of product.
- 7) Price label: it indicates price of product.

3.7.5 Package size & label:

Most common sizes are

- S - Small
- M - Medium
- L - Large

XL - Extra large

XXL - Very very large.

3.7.6 Duties & Responsibilities of Marketing Officer:

Dealing with the buyer & convince the buyer is the main duty of the marketing officer. A marketing officer also has some other duties. The main duties responsibilities of a marketing officer are given below:-

- ✓ To prepare cost sheet by dealing with the buyer.
- ✓ To take different steps by discussing with the high officials & merchandisers.
- ✓ To maintain a regular & good relationship between commercial officer & merchandisers.
- ✓ To maintain a regular communication with the buyer & buying houses.
- ✓ Communicate with the new buyers.
- ✓ Display the better criteria of the products.

3.8 EFFLUENT

TREATMENT PLAN

EFFLUENT TREATMENT PLAN (capacity-30 M³/hr)

3.8.1 Description of the ETP process:

Equalization tank consist raw effluent. At the beginning, raw effluent is led to the mixing tank/reaction tank by pumping.

1. In mixing tank, Lime and Ferus sulphate are added with effluent; blower is used to mix properly.
2. At the end of the reaction the solution is led to the flocculation tank where poly Electrolite/ poly Acrylamide is added for further reaction; blower is used here too.
3. From the flocculation tank solution is drained to Tube settler-1. Here, sludge is divided and placed in the sludge sump.
4. After the operation of Tube settler-1, the solution is brought to P^H correction chamber where HCL is mixed to control the required P^H.
5. After the completion of PH correction the solution is led to the biological reaction tank-1 & 2. In this tank BACTERIA MEDIA is used to absorb the harmful insects that exist in effluent. A bit amount of DAP (Di-amonium phosphate) + Urea (2:1) is also used here as food of bacteria.

When the plant is stopped the mixture (DAP + Urea) is to use more.

DO (Dissolved Oxygen) is to cheek and control in both the reaction tank. The tested temperature is approx. 40⁰C here.

1. From the biological reaction tank water is again drained to Tube settler-2. Like Tube settler-1, sludge is divided here too and placed in the sludge sump.
2. The main action of filter feed sump is to accelerate the cleaner effluent and make it flow the pressure sand filter and Activated carbon filter for final filtration. After the filtration the treated water is drained out in the air.

Before draining out the treated water, the BOD (Biological Oxygen Demand) and COD (Chemical Oxygen Demand) are to cheek and keep it in required range. The tested temperature of the outlet water is approx.38⁰C.

1. The less contaminated liquid that is obtained from different operations except dyeing is stored in the less contaminated reservoir. It needs filtering too before drain out.
2. In another operation, liquid sludge is collected from sludge sump and makes it inject into Sludge thickening tank.
3. In sludge thickening tank, divination of raw sludge is occurred by centrifuge hydro extractor and the filtrated liquid is led to the equalization tank further processing.

4. The centrifuge hydro extractor is used to convert the sludge into cake which is later brought to the air by the help of hand-drum. After hydro extracting, the rest substance is drained to the equalization tank for further processing.
5. The tested temperature of the equalization tank is approx. 42⁰C. Here, blowers perform to maintain proper circulation of the effluent.

3.8.2 FUNCTIONS OF DIFFERENT INGREDIENTS USED IN E.T.P PLANT:

Lime : Lime is used to change the color of effluent and to increase the transparency of water.

Ferus Sulphate: Ferus Sulphate is used for the agglomeration of the foreign matters present in the effluent.

Poly Electrolite: Poly Electrolite helps to make the agglomerated materials be gummy for easy deposition below the surface of water.

Hydrochloric Acid: Hydrochloric Acid is used to sustain the required P^H of the treated water.

Water quality of E.T.P:

<i>Parameter</i>	<i>Permissible concentration</i>
BOD	< 50 ppm
COD	< 200 ppm
Color	Colorless
Temperature	Max ^m 38 ⁰ C
P ^H value	6 – 9
Total Dissolved solid (TDS)	< 2500 ppm
Total suspended solid (TSS)	< 100 ppm
Dissolved oxygen (DO)	4.5 – 8

3.9 COMPLIANCE

3.9.1 COMPLIANCE:

Compliance means conformity of certain standard. PPC maintain a moderate working condition for their employees. Though it is well established project, there is some lacking of proper compliance issues. Here is list of compliance in which some points are maintained fully and some are partially

- ❖ Compensation for holiday
- ❖ Sexual harassment policy
- ❖ Child labor abolition policy
- ❖ Anti-discrimination policy
- ❖ Zero abusement policy
- ❖ Working hour policy
- ❖ Hiring /recruitment policy
- ❖ Environment policy
- ❖ Security policy
- ❖ Buyers code of conduct
- ❖ Health and safety committee
- ❖ Canteen
- ❖ Equal remuneration
- ❖ National festival holiday
- ❖ Overtime register
- ❖ Labor welfare
- ❖ Weekly holiday fund
- ❖ Time care
- ❖ Accident register
- ❖ Workman register
- ❖ Health register
- ❖ Leave with wag

3.9.2 HEALTH:

- ❖ Drinking water at least 4.5 L/day/employee
- ❖ Cup availability
- ❖ Drinking water supply
- ❖ Water cooler ,heater available in canteen
- ❖ Drinking water signs in Bangla and English locate min. 20 feet away from work place
- ❖ Drinking water vassal clean at once in a week
- ❖ Water reserve at least once a week
- ❖ Water center in charge person with cleanliness
- ❖ Suggestion box register

3.9.3 TOILET:

- ❖ Separate toilet for women and men
- ❖ A seat with proper privacy and lock facility
- ❖ Effective water sewage system
- ❖ Soap toilet
- ❖ Water tap
- ❖ Dust bins
- ❖ Toilet white washed one in every four month
- ❖ Daily cleaning log sheet
- ❖ No-smoking signs
- ❖ Ladies /gents toilet signs both in bangle and English
- ❖ Deposal of wastes and effluent

3.9.4 FIRE:

- ❖ Sufficient fire extinguisher and active
- ❖ Access area without hindrance
- ❖ Fire signs in both languages
- ❖ Fire certified personal photo
- ❖ Emergency exit

3.9.5 SAFETY GUARD:

- ❖ Metal gloves on good conditions
- ❖ Rubber mats & ironers
- ❖ First aid box one
- ❖ Ironers wearing sleepers
- ❖ First trained employees

- ❖ Motor/needle guard
- ❖ Eye guard
- ❖ Doctor
- ❖ Medicine
- ❖ Welfare officer

3.9.6 OTHERS:

- ❖ Room temperature
- ❖ Lighting facilities



Fig: Doctor



Fig: First aid box



Fig: Fire training

4. Impacts of internship

Sample development

- I know what type of sample produced here
- System of sample approval
- I know what type of machine here

Cutting

- I know about cutting fabric
- I know about method of cutting
- Defect of cutting section
- How to remove fabric wastage

Sewing

- I know about many type of sewing machine
- I know about function of sewing machine
- I know about sewing fault and their remedies
- I know about total production of this section

Finishing

- I know about total production of this garments
- To know about price tag, hang tag
- To know about how to quality assurance

Compliance

- To know about their compliance system
- I know about medical facilities

5. Conclusion:

Industrial attachment program send us to the expected destiny of practical life. Through The completion of Two Month industrial attachment at *MEGHNA KNIT COMPOSITE Ltd*, we have got the impression that the factory is one of the most knit dyeing projects in Bangladesh. Though it was established 15 years ago, it has earned very good reputation for its best performance over any other knit dyeing project. During our industrial attachment program we had tried to our best to done our duty. Our supervising officer also satisfied to us & offer co-operation in every steps. It is completely a new experience in our life, which will be very effective in our service life. During our training period we realized that practical experience is valuable for service life.