Faculty of Engineering
Department of Textile Engineering

REPORT ON
Industrial Attachment
At

Knit Concern Ltd.

Goadnail, Narayangonj.

Course Title: Industrial Attachment
Course Code: TE-418

Submitted By
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ID: 151-23-4289

Supervised By
Md. Abdullah Al Mamun
Assistant professor

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

Advance in Apparel Manufacturing Technology

Duration: From September 15, 2018 to October 20, 2018

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DECLARATION

I hereby declare that this industrial attachment report has not been taken or copied from anywhere. I have done this report totally on my own. I also declare that neither this industrial attachment not any part of this industrial attachment has been submitted elsewhere for the award of any degree or diploma.

Submitted By

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ID: 151-23-4289

Department of Textile Engineering,

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ACKNOWLEDGEMENT

At first I would like to express my heart-felt thanks to almighty ALLAH for his kind blessing for complete of this internship report successfully.

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APPROVAL SHEET

This Industrial Report prepared and submitted by Ruhit Nandi, ID: 151-23-4289 in partial fulfillment of the requirement for the degree of BACHELOR OF SCIENCE IN TEXTILE ENGINEERING has been examined and hereby recommended for approval and acceptance.

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Abdullah Al Mamun

Assistant Professor

Department of Textile Engineering

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1. EXECUTIVE SUMMAR

The Industrial Attachment is the most effective way for Textile Engineering student to be achieved the knowledge about the practical field of the Textile Manufacturing. It brings an opportunity to all the learners to enrich their academic knowledge by practicing with the experts of the practical field of textile.

It is my pleasure that I had an opportunity to complete my two month internship at Knit Concern Ltd. which is one of the most modern industries of the country.

In this report, we have tried to give some information about knit Concern Ltd. and I have observed that Knit Concern Ltd. Produced high quality garment and fulfill the special requirements from the different types of buyers by according different activities.

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2. INFORMATION ABOUT FACTORY

2.1 INTRODUCTION

Industrial attachment is an important and essential part of 4-year B.Sc. in Textile Engineering Course. Actually Industrial attachment is the practical experience for every Textile Engineer Which is needed to be familiar with not only the industry but also all over necessary job related to continue any industry. Textile Engineer is a technical course that is why industrial attachment is badly needed to be good at Textile Engineer. During student life one student need to complete many courses including major subjects but industrial environment is totally unknown. So by industrial attachment, it can know about industrial environment and activities. Through it is very helpful and lays the milestone for starting the carrier for fresh textile graduates. The **KNIT CONCERN GROUP** is truly an excellent industry from our point of view. All types of modern technology are well arranged here. In our study period which we study, there have similarity between theoretical and practical knowledge. But some things will changes according to technical change. Every section helps me so much by giving information during our training period which was unbelievable. Especially IT Department maintains the Management Information System a vital function for the company's smooth operation and development. I am so much satisfied and lucky student to complete my attachment in **KNIT CONCERN GROUP** which is 100% Export Oriented Knit Composite Textile Industry. In **KNIT CONCERN GROUP** there have a well oriented mosque and management have permission to join prayer during prayer time. I think this Industrial attachment will be helpful in our career life.

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2.2 HISTORY OF THE FACTORY:

With a mission of providing very high quality knit apparel to the international market, Knit Concern Group emerged in 1990 and has started manufacturing and exporting since 1992.

Having all vertical setups as a full knit project situated in a single 18 acre premise, it is the country's one of the few elite private sector business groups which not only serves the international buyers with the height of professionalism but also contributes in terms of wealth, Welfare and Eco-friendliness to its homeland. One of the top taxpayers in the country, Knit Concern is now employing about 18,000 people.

In short, top class human resource, cutting-edge technology, production capacity, efficiency and unique organizational dexterity to quickly respond to the changes in design and style in the international apparel markets have steadily brought forward Knit Concern as a new frontline player in the global apparel market.

Today, Knit Concern produces and exports about 200,000 pieces of knit apparel and 50,000 pieces of lingerie of latest quality and design every day.

2.3 FOUNDER & DIRECTORS:

Founder & Director: Joynal Abedin Mollah, President & CEO.

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2.4 GENERAL INFORMATION ABOUT THE FACTORY:

Table2.1: General information

Name of the company	KNIT CONCERN Ltd.
Logo	
Type	100% Export Oriented Composite Knitwear Industry
Factory address	62 Water Works Road, Gognail, Narayangong-1400 Bangladesh.
Contact No.	+880 2-7648766
Fax	02-7641087
E-mail address	info@knitconcern.com
Web	www.knitconcern.com
Person to be contact	02 7631086, 02 7645641
Year Of Establishment	1990
Business	100% Export Oriented Knit Fabrics manufacturer & RMG exporter.
Products	Knit Wear & Knit Garments
Production Capacity	Knitting: 80 ton/day Garments: 2,00000 Pieces/day Dyeing: 50 ton/day
No of Employees	18,500
Legal Form of Company	Private Limited Company.

2.5 Location layout

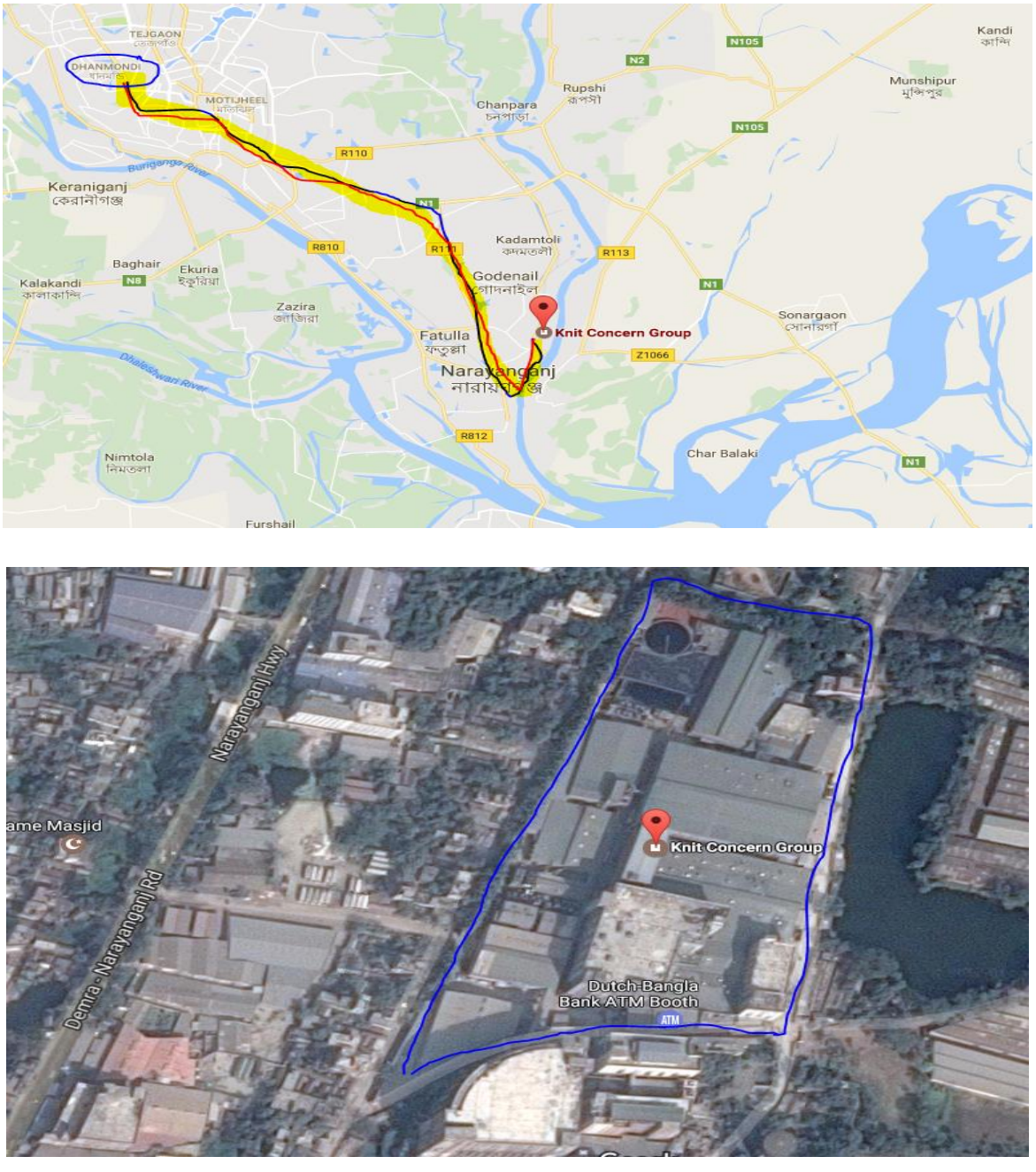

Figure 2.1 Satellite View of Knit Concern Group

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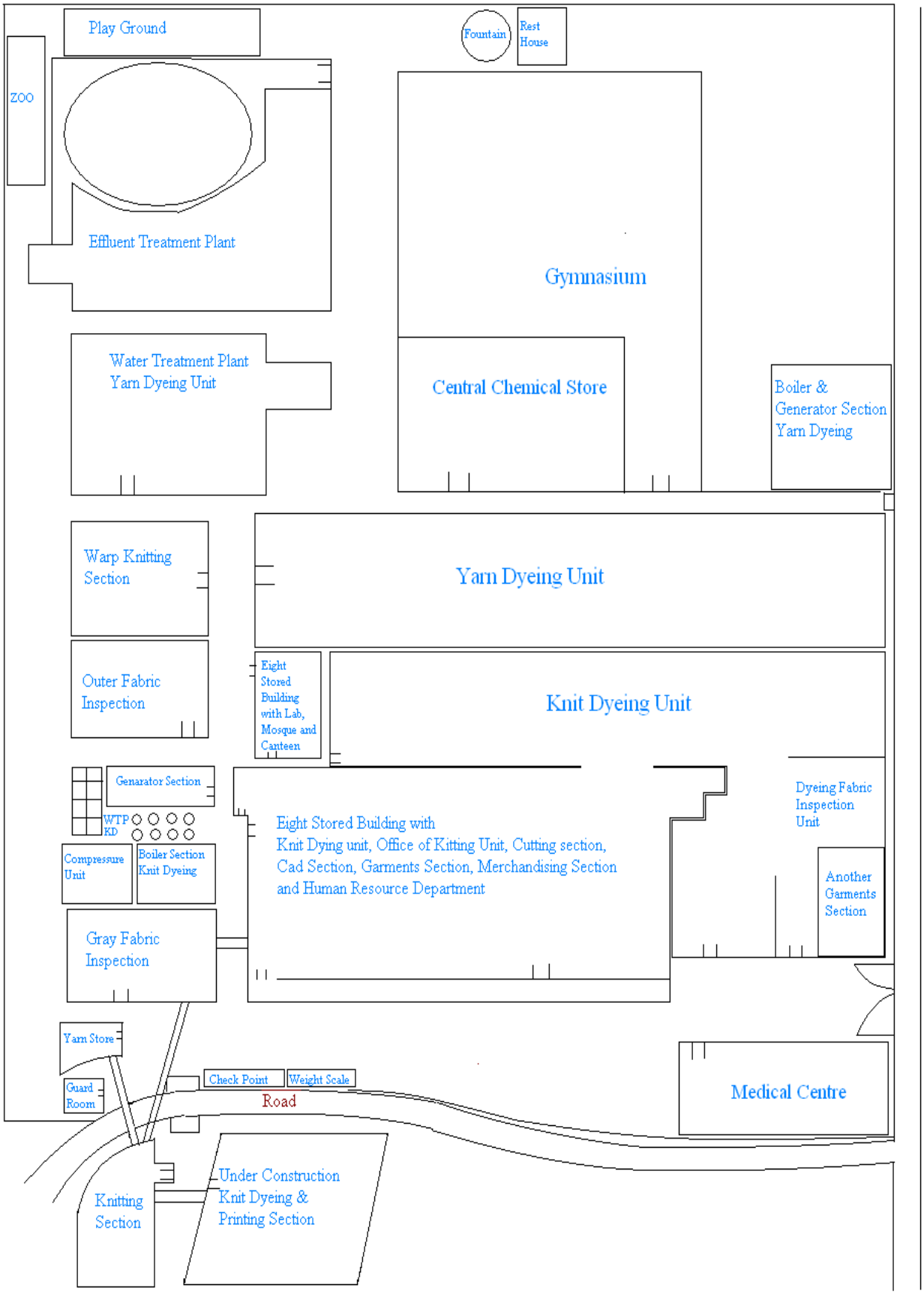
2.6 Layout



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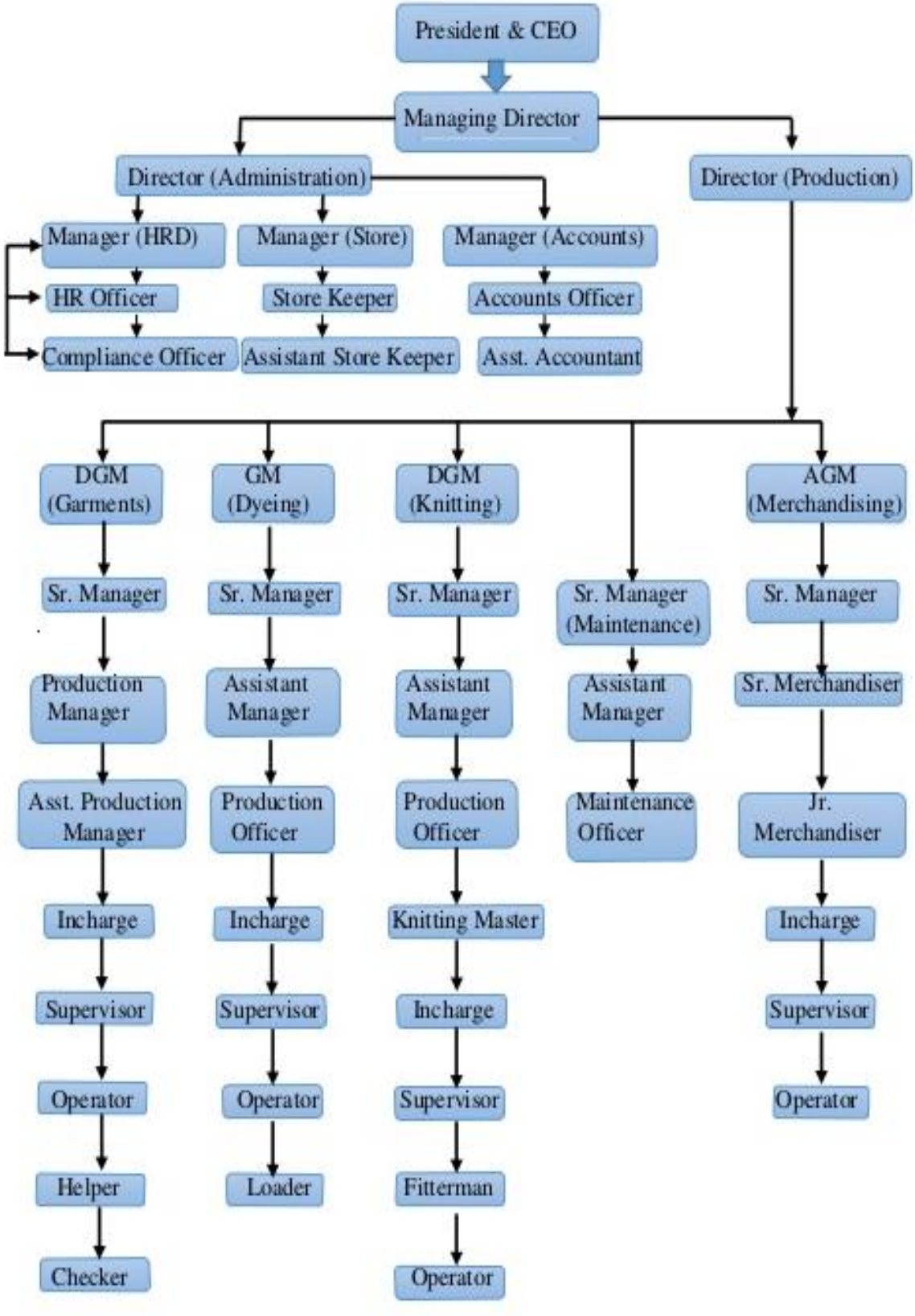
2.7 Organogram



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2.8 Sister Concerns

- KC Apparel Ltd.
- Knit Concern Ltd.
- KC Print Ltd.
- KC Yarn Dyeing Ltd.
- KC Lingerie Ltd
- KC Printing Unit Ltd.
- KC Fashion Ltd.
- KC Sports Ltd.

2.9 Export growth by graph

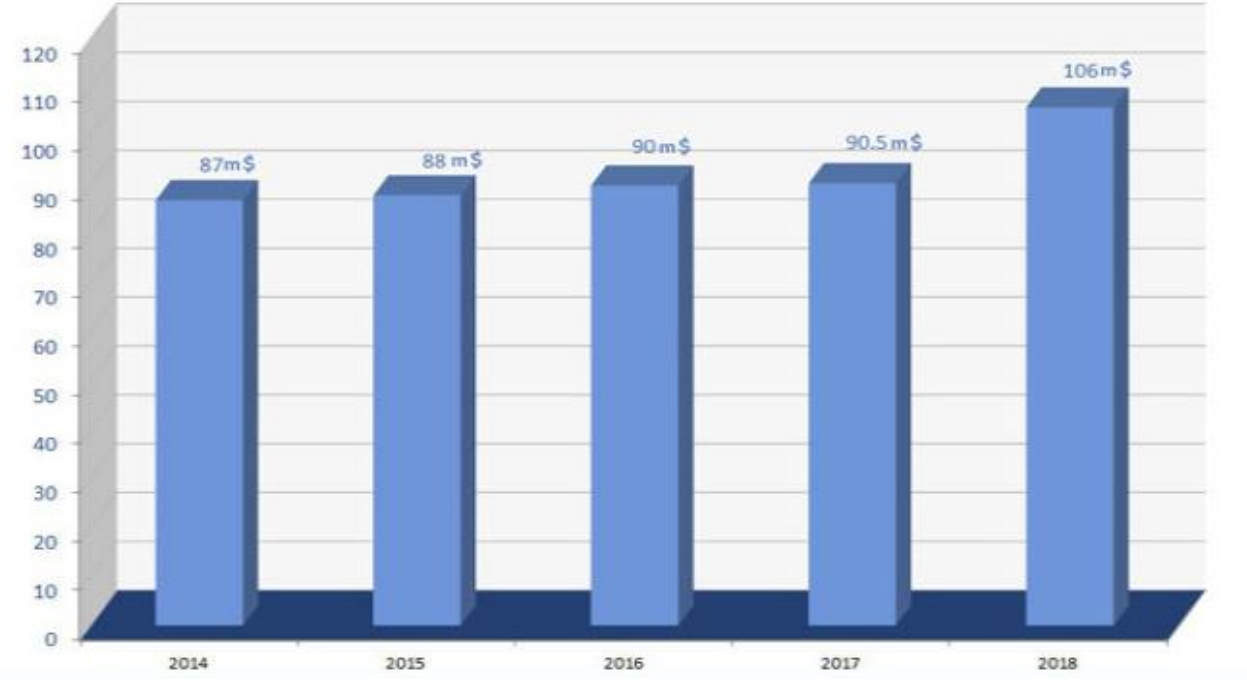

Figure 2. 2: Export Growth of (KCL)

2.10 Product mix

a) Knitted Grey Fabric:

Single Jersey, Double Jersey,S/J Lyc., Rib, 1X1 Rib Cotton Lyc., Interlock, Lacoste, all kinds of Pique, Engineering Stripe, waffle, Jersey twill and so on.

i. 100% Cotton
ii. 100% Organic Cotton
iii. CVC (60/40)
iv. Mélange
v. PC(60/40, 65/35,80/20)

b) Knit Garments:

T- Shirt, Polo Shirt, Golf Shirt, Trouser, Lingerie, Fashion dress & Children wears etc.

2.11 Brief Profile

a) Number of Manpower:

Total Number of manpower: 18,500

b) Area:

Total area of Industry: 20 acre

c) Production Details:

- **Knitting Section:**

  Capacity: 80 tons/day

  Total Number of Machine: 300 nos.

- **Dyeing Section:**

  Capacity: 50 tons/day

  Total Number of Machine: 120 nos.

- **Garments Division:**

  Capacity: 2, 00000 pieces

  Total Number of Machine: 2.000 nos.

- **Lingerie Section:**

  Capacity: 50,000 pieces

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2.12 Major buyers with their Logo

Table2 2: Major buyer with their Logo

Buyer's Name	Origin	Logo
H& M	Sweden	
K& L	France	
Fashion Fit	France	
Okaidi	France	
Jules	France	
WE	France	
CAMAIEU	France	
BONOBO	France	
Phildar	France	
Jacadi	France	

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2.13 Certification

Knit Concern is certified with ISO 9001:2008 Quality Management System, BSCI, WRAP, SEDEX, Oko-Tex and SCOPE (Organic). It is one of the top contributors to the national exchequer and revenue income for that.

Table2.3: Certification

ISO Certificate

Organic Certificate

1st May Fair Certificate

Oeko-Tex Certificate

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2.14 Other Facilities & achievement:

- **Staff canteen:** The canteen is capable to accommodate about 250 persons at a time.

- **Mosque:** The mosque is capable to accommodate about 500 persons at a time.

- **Medical:** Available Facilities.

- **Cleanness:** The factory premise are kept clean, removing the dirt & refuges, cleaners sweep the floor at regular interval effective arrangement are made to dispose of the waste to the nearby dustbin.

- **Water:** Sufficient water is supplied from in house deeptubewell to all production lines including toilet. Moreover, each floor provided with tank for portable water.

- **Toilet:** Sufficient numbers of toilets are available for male & female workers as per requirements. Soaps & towels are also supplied.

- **Emergency Electricity Supply:** During the electricity failure, available generators can fulfill requirement of the whole complex. Knit Concern now is having Oeko Sustainable Textile, i.e., Oeko-Tex Standard 100, which as you know, entrusts it to produce apparels using organic cottons cultivated and Traded conforming to eco-friendly standards all through.

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2.14 Mission and vision

Mission:

The broad mission of Knit Concern Group is to provide its customers the best possible satisfaction and value for their money facilitating them with sound principles and commitment to highest quality achievable.

Vision:

The vision of Knit Concern Group is to emerge as a premier manufacturer and exporter of knitwear in the world market.

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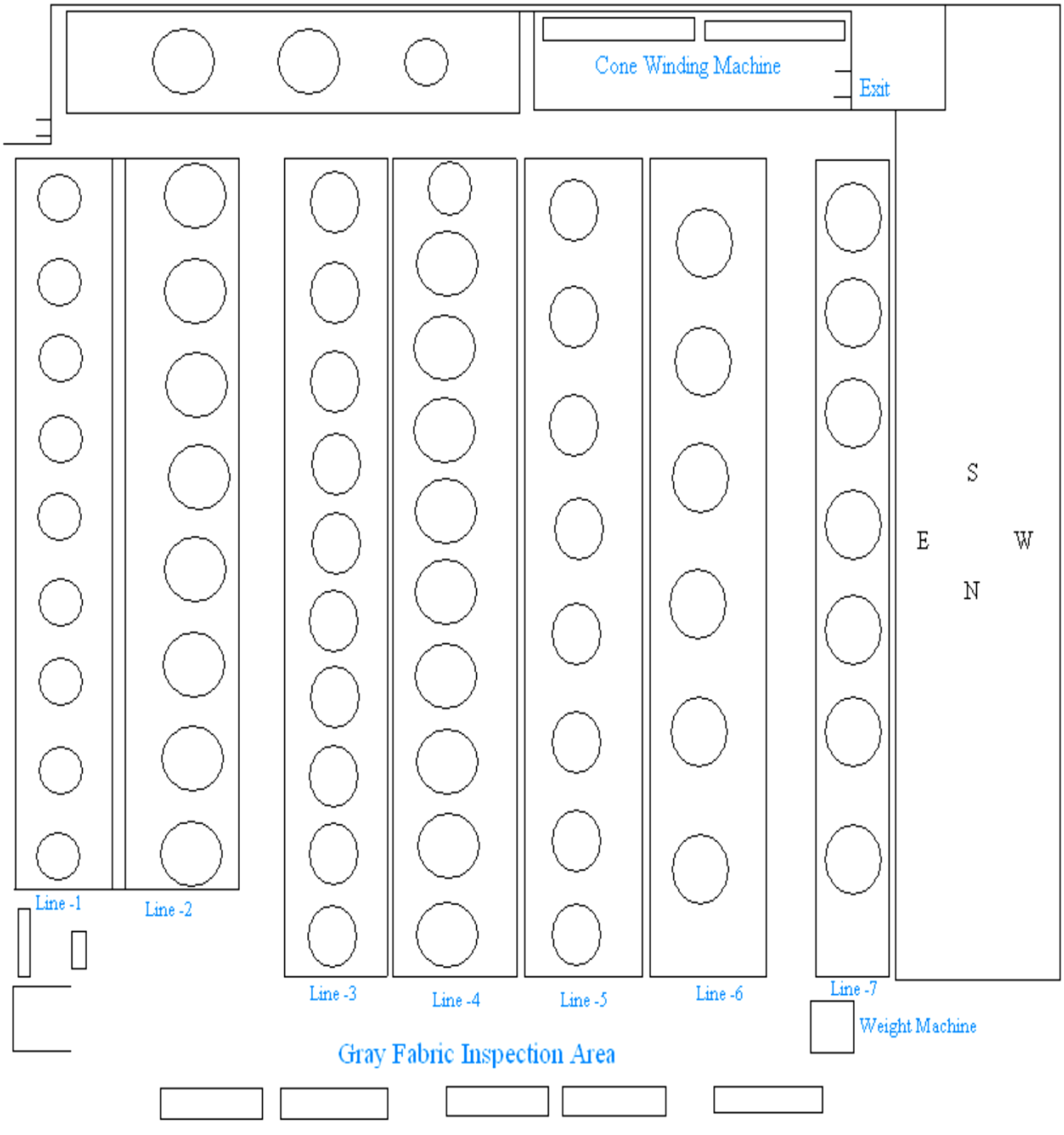
3. Description of the Attachment

3.1Knitting Section

3.1.1 Layout



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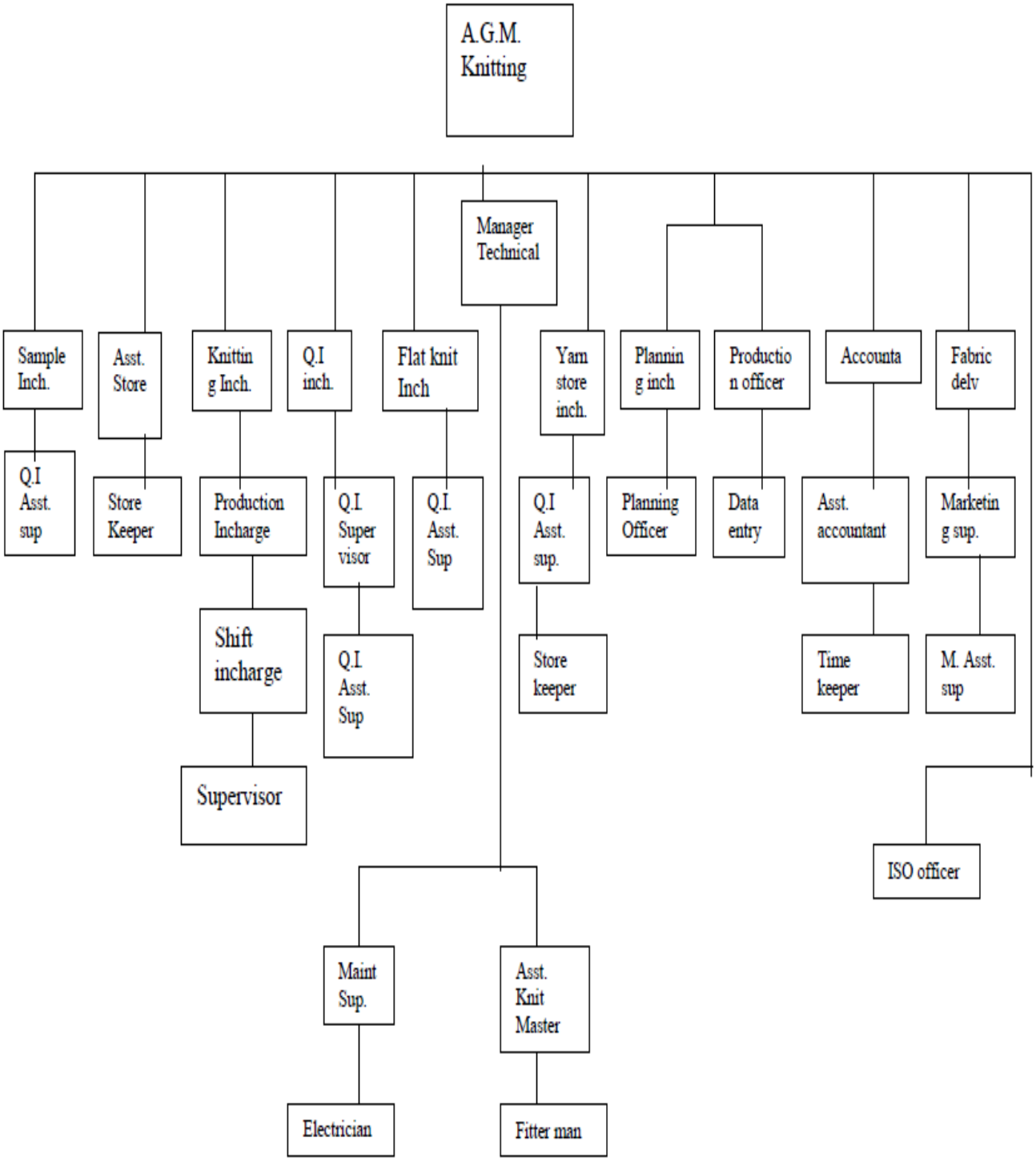
3.1.2 Organogram for Knitting Section



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3.1.3Production Flow Chart of Knitting Section:

Sample fabric

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Design analysis

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Machine selection

↓

Setting the machine for the specific design

↓

Sample Knitting

↓

Sample approval

↓

Bulk Production

↓

Grey fabric inspection

3.1.4 Product Details:

Raw Materials used in Knit Concern Group:

Table3.1: Raw materials and their specification

Types of yarn	Count
Cotton Yarn	16/1,20/1, 24/1, 30/1, 34/1,40/1, 60/1
Polyester Yarn	75/D, 100/D,150/D
Carded Yarn	10/1,20/1,24/1,30/1,40/1
Grey Melange (C-90% V-10%)	10/1,24/1,30/1,34/1
PC (65%Polyester& 35% cotton)	10/1,30/1
CVC(95%cotton & 5% polyester)	24/1, 26/1, 28/1, 30/1
Combed yarn	20/1,24/1,30/1,40/1

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Source of Yarns:

- India
- Delta Spinning Mill
- Hanif Spinning Mill
- Nahid Textile Mill
- Square Textile Mill
- Kader Synthetic Mill
- Knittex Textile Mill

3.1.5 Machine Description:

Table3.2: Single jersey

m/c no.	Diameter	Brand	Origin	Type	Gauge	Feeder	Quantity	Lycra-Attachment
1	15	Orzio	Italy	S/J	24	45	1	No
2	16	Fukuhara	Japan	S/J	24	48	1	No
3	17	Orzio	Italy	S/J	24	51	1	No
4	18	Fukuhara	Japan	S/J	24	54	1	No
5	19	Orzio	Italy	S/J	24	57	1	No
6	20	Fukuhara	Japan	S/J	20/24	60	1	No
7	21	Fukuhara	Japan	S/J	20/24	63	1	No
8	22	Fukuhara	Japan	S/J	20/24	64	1	No
9	23	Fukuhara	Japan	S/J	20/24	69	1	No
10	24	Fukuhara	Japan	S/J	20/24	72	1	No
11	26	Fukuhara	Japan	S/J	20/24	78	1	Yes
12	28	Fukuhara	Japan	S/J	20/24	84	1	Yes
13	30	Fukuhara	Japan	S/J	20/24/82	90	1	Yes
14	30	Fukuhara	Japan	S/J	20/24/28	90	1	Yes
15	30	Fukuhara	Japan	S/J slitting	20/24/28	90	1	Yes
16	30	Fukuhara	Japan	S/J slitting	20/24/28	90	1	Yes
17	32	Fukuhara	Japan	S/J slitting	20/24/28	96	1	Yes
18	32	Fukuhara	Japan	S/J slitting	20/24/28	96	1	Yes
19	34	Fukuhara	Japan	S/J	20/24/28	102	1	Yes

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				slitting				
20	34	Fukuhara	Japan	S/J	20/24/28	102	1	Yes
21	36	Fukuhara	Japan	S/J	20/24/28	118/108	1	Yes
22	36	Fukuhara	Japan	S/J	20/24/28	118/108	1	Yes
23	38	Fukuhara	Japan	S/J	20/24/28	114/122	1	Yes
24	38	Fukuhara	Japan	S/J	20/24/28	114/122	1	Yes
25	38	Fukuhara	Japan	S/J	20/24/28	114/122	1	Yes
26	40	Fukuhara	Japan	S/J	20/24	120	1	Yes
27	42	Fukuhara	Japan	S/J	20/24	120	1	Yes
28	34	Fukuhara	Japan	S/J slitting	24/28	110	1	Yes
29	25	Fukuhara	Japan	S/J	20/24	75	1	No
30	26	Fukuhara	Japan	S/J	20/24	78	1	No
31	30	Mayer & Cffi	Germany	S/J slitting	20/24/28	96	1	Yes

Table 3.3 Fleece

252, 253	28	Fukuhara	Japan	3-Thread fleece	16/20	84	2	Yes
254, 255	30	Fukuhara	Japan	3 Thread fleece	16/20	90	2	Yes

Table 3.4: Rib/Interlock

101	30	Well	Taiwan	Rib	18	52	1	Yes
102	30	Fukuhara	Japan	Rib/Interlock	18/22	60	1	Yes
103	33	Fukuhara	Japan	Rib/Interlock	18	60	1	Yes
104	33	Fukuhara	Japan	Rib/Interlock	16/18/22	60	1	Yes
105/106	34	Fukuhara	Japan	Rib/Interlock	18/22	60/62	2	Yes
107	36	Fukuhara	Japan	Rib/Interlock	18/22	60	1	Yes
108	36	Fukuhara	Japan	Slock	16/18/22	60	1	Yes
109	38	Fukuhara	Japan	Slock	18/22	64	1	Yes
110/111	38	Fukuhara	Japan	Rib/Interlock	18/22	68	2	Yes
112/113	40	Fukuhara	Japan	Slock	14/16/18	68	2	Yes
114/115	42	Fukuhara	Japan	Rib/Interlock	18/22	72	2	Yes

Table 3.5: Interlock

151	30	Fukuhara	Japan	Interlock	22	108	1	No
152/153/154	36	Fukuhara	Japan	Interlock	22	120	3	No
155 to 158	38	Fukuhara	Japan	Interlock	22	126	4	No
159	50	Lisky	Taiwan	Interlock	18/22	180	1	No

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Table 3.6: Single Jersey Auto Striper

201/202/203	30	Fukuhara	Japan	Auto Striper 4 Color	16/20	48	3	No
205	30	Fukuhara	Japan	Auto Striper 6Color	20/24	42	1	Yes
204	34	Fukuhara	Japan	Auto Striper 4 Color	20	48	1	No

Table 3.7: Rib/Interlock Auto Striper

226	33	Fukuhara	Japan	Auto Striper 4 Color	18/24	48	1	Yes
227		Fukuhara	Japan	Auto Striper 4 Color	18/24	48	1	Yes

Table 3.8: FLAT KNIT M/C

SL No.	Model No.	BRAND	GAUGE	WIDTH	FEEDER	TYPE	ORIGIN	QTY
1,9,11	MC 172SJ	MATSUYA	14”	68”	06	Computerized	China	04
2,3	CMT211	STOLL	14”	84”	06	Semi-Jacquard	Germany	02
4-8	SFF 152	SHIMA SEIKI	14”	60”	04	Computerized	Japan	05
12-15	PT 222	PROTTI	14”	218 cm	06	Computerized	Italy	04

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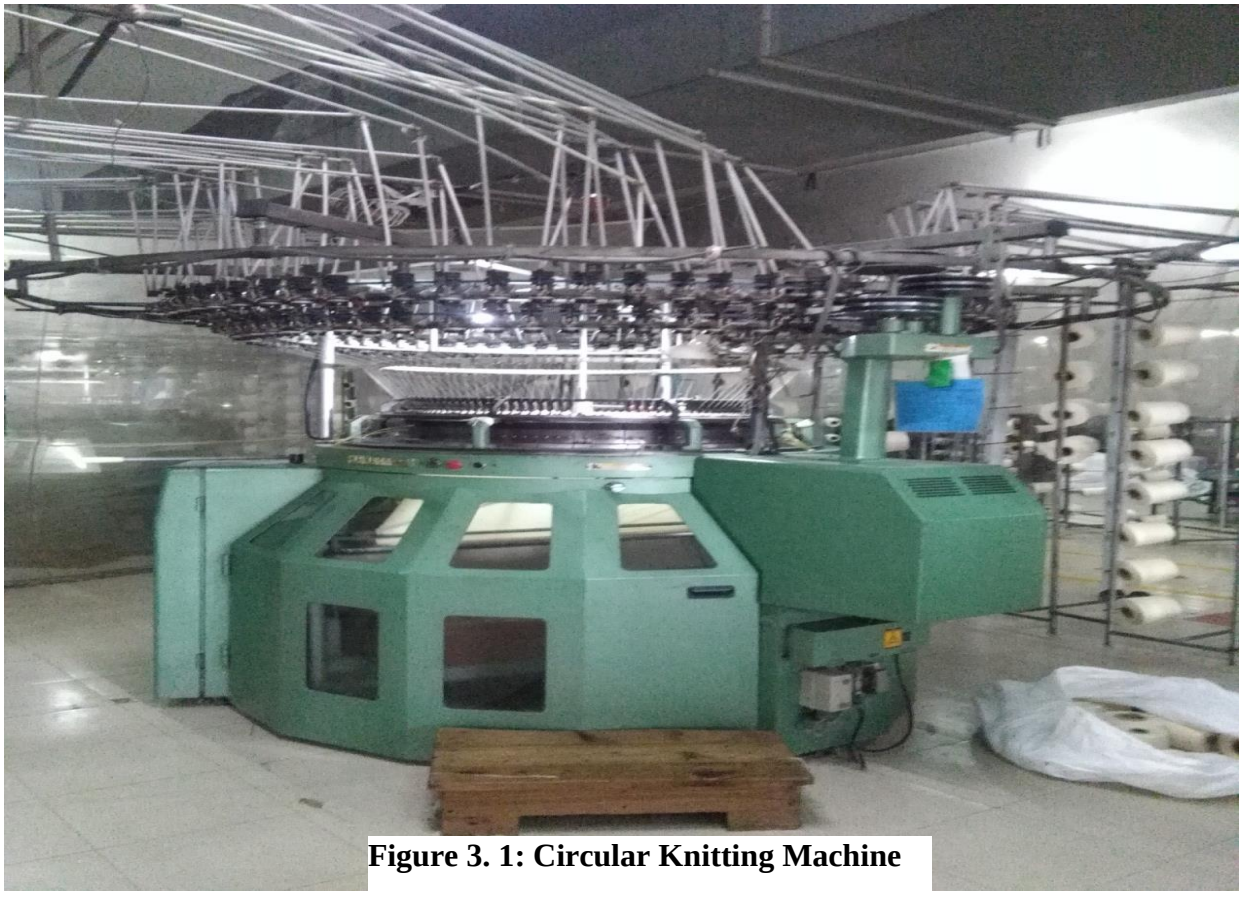

Figure 3. 1: Circular Knitting Machine

Figure 3. 2: V-Bed Knitting Machine

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3.1.6 Types of Fabric Produced in KCL

Single jersey:

- Single jersey (Plain)
- Single lacost.
- Double lacost.
- Polo pique.
- Fleece fabric.
- Fleece terry.

Rib or double jersey:

- 1x1 rib.
- 2x2 rib.
- Flat back rib.
- Lycra rib.

Interlock:

- Plain interlock.
- Drop needle interlock.

Pique fabric. Collar and cuff:

- Plain collar.
- Stripe collar.
- Picot collar.
- Raising collar.
- Folding collar.

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3.1.7 Some Fabric Sample

Table3.9: Sample of fabric

Single jersey	Single jersey (slub)	pique fabric
5×2 rib	2×2 ribopel	Fleece
Terry	Lingerie S/J (100% polyester)	Jersey Jacquard
Rib for hand (Flat knit m/c)	Velvet fabric	Interlock

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3.1.8 Knitting Faults & Remedies:

a) Hole Mark

Causes:

- Holes are the results of yarn breakage or yarn cracks.
- During loop formation the yarn breaks in the rejoin of the needle hook.
- If the yarn count is not correct on regarding structure, gauge, course and density.
- Badly knot or splicing.
- Yarn feeder badly set.

Remedies:

- Yarn strength must be sufficient to withstand the stretch as well as uniform.
- Use proper count of yarn.
- Correctly set of yarn feeder.
- Knit should be given properly.

b) Needle Mark

Causes:

- When a needle breaks down then needle mark comes along the fabrics.
- If a needle or needle hook is slightly bends then needle mark comes on the fabrics.

Remedies:

- Needle should be straight as well as from broken latch.

c) Sinker Mark

Causes:

- When sinker corrodes due to abrasion then sometimes cannot hold a new loop as a result sinker mark comes.
- If sinker head bend then sinker mark comes.

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Remedies:

- Sinker should be changed.

d) Drop Stitches

Causes:

- Defective needle.
- If yarn is not properly fed during loop formation i.e. not properly laid on to the needle hook.
- Take-down mechanism too loose.
- Insufficient yarn tension.
- Badly set yarn feeder.

Remedies:

- Needle should be straight & well.
- Proper feeding of yarn during loop formation.
- Correct take up of the fabric & correct fabric tension.
- Yarn tension should be properly.

e) Oil stain

Causes:

- When oil lick through the needle trick then it pass on the fabrics and make a line.

Remedies:

- Ensure that oil does not pass on the fabrics.
- Well maintenance as well as proper oiling.

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3.2 Sample Section:

3.2.1 Layout

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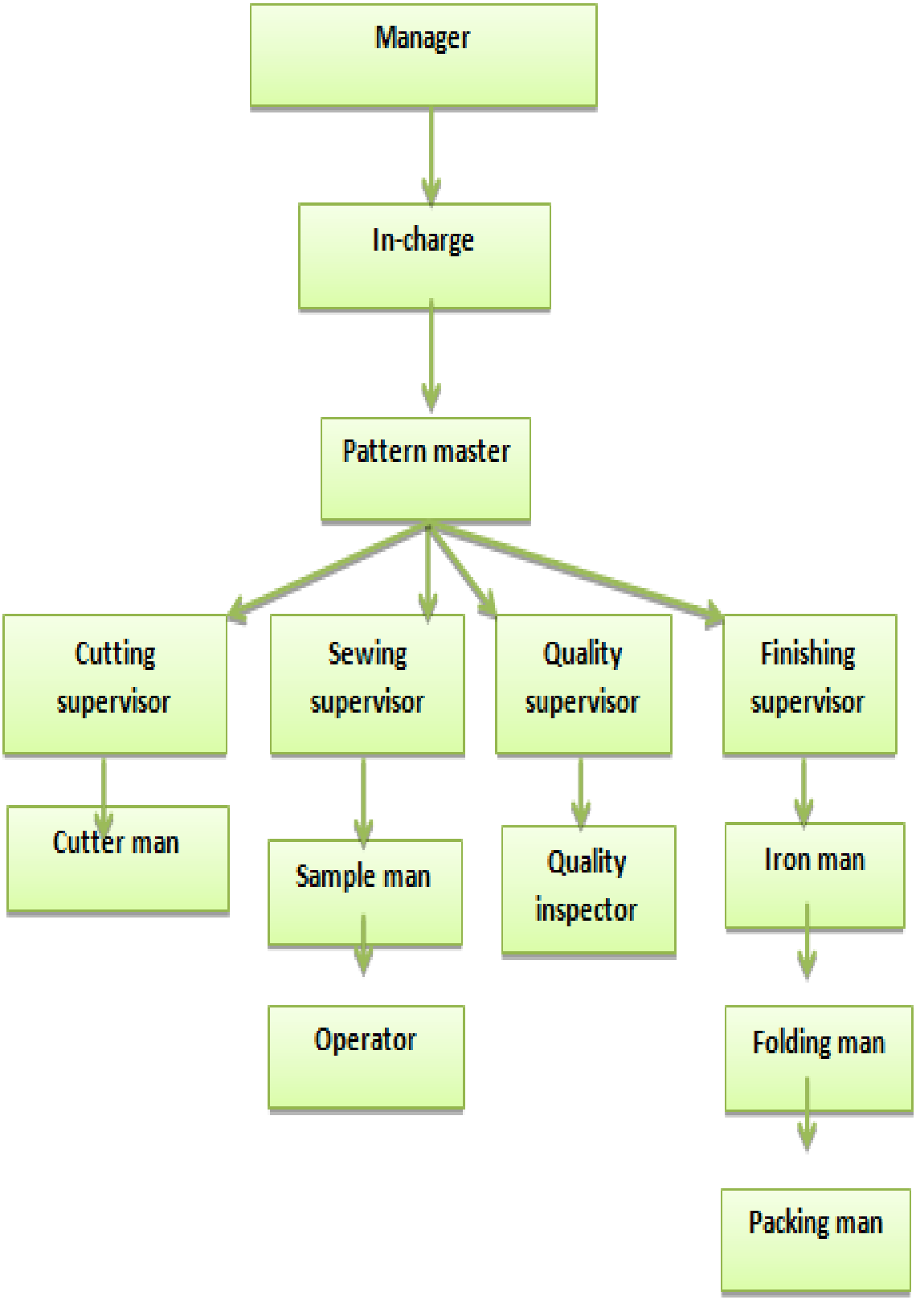
3.2.2 Organogram of Sample Section



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3.2.3 Sample

Knit Concern Limited has separate sample section which is located in 7th floor in the apparel building. This is one of the most important departments in this industry. It plays a vital role to get order. Several sections are included in this department such as pattern making, marker making, fabric consumption, and thread and accessories consumption etc. Besides by doing sampling only the exporter can optimize the processing parameters for mass production, which helps to avoid all kind of bottlenecks.

Figure 3. 3: Sample room

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3.2.4 Types of sample & their uses

Knit Concern Limited sends many samples to buyers. They are:

Table3.10: Type of sample & their uses

Serial no.	Sample	Use
01	Proto/ Development Sample	To convert the pattern into actual garment.
02	Size set/ Grade/ Fitting Sample	To fit the styling of the garment.
03	Additional Sample (White Only) Magazine. Photo shot) garment on the rack.	All these Samples are made to show the garment of the rack
04	Contract Seal/ Seal Sample	To gain approval before the bulk Production.
05	Pre Production (PP) sample	To gain approval before the bulk Production.
06	Production Sample	To gain approval for shipping the garment.
07	Sales Man Sample (SMS)	To gain approval for bulk production
08	Rack Sample	To show the garment on the rack.

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3.2.5 Flow Chart Sample Making

Design / Sketch

↓

Pattern Design

↓

Sample Making

↓

Production Pattern

↓

Grading

↓

Marker Making

↓

Spreading

↓

Cutting

↓

Sorting/Bundling

↓

Sewing/Assembling

↓

Inspection

↓

Pressing/ Finishing

↓

Final Inspection

↓

Packing

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3.2.6 Machineries of Sample Room

Table3.11: Type of machine & No. of machine

Types of Machine	No. Of Machine
Plain M/C	40
Over Lock M/C	26
Flat Lock M/C	21
Button Hole M/C	1
Gathering M/C	1
Button Attaching M/C	1
Zigzag Plain M/C	1
Bar Tack M/C	1
Rib M/C	1
Total M/C	93 nos.

3.2.7 Pattern making

Pattern is the one of important part of a design. In a garment industries there are two type of pattern uses based on their capability. Mostly big companies are use CAD (Computer aided design) as well as little companies' uses manual pattern. There are 10-12 high skilled pattern masters working here.

The Instructions to be sent to the Production Department by the Pattern Maker is called Production Pattern Instructions. Following instruction must be marked on apparel pattern, to enable the garment to be made up correctly.

Knit Concern utilizes the latest computer aided systems to develop patterns and markers to thrive to ensure each piece of apparel it makes would be an identical reproduction of the approved samples and the fabrics it uses to make that apparel would leave the minimum wastage possible.

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3.2.8 Some Stitches Sample

Table3.12: Some stitches sample

Single thread chain stitch	Multi thread chain stitch	Over lock (4 thread)
Chill Cutting	Plain stitch	Over lock (3 thread)
Chill cutting multi thread chine stitch (5 thread)	2 Needle piping	1 needle piping

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3.2.9 Pattern & Marker Making Machinery:

Table3.13: Specification of pattern & marker making m/c

Name	Brand	Origin	Qty.
CAD Software	Lectra	France	1
	Gerber	USA	1
	Winda	China	1
Ploter M/C	Gerber	USA	1
	Winda	China	2

3.2.10 Pattern grading

Pattern grading is an essential part of pattern making. Grading rules determine how patterns increase or decrease to create different sizes. Fabric type also influences the pattern grading standards. The cost of pattern grading is incomplete without considering marker making. IGL doing grading by-

- Computerized grading

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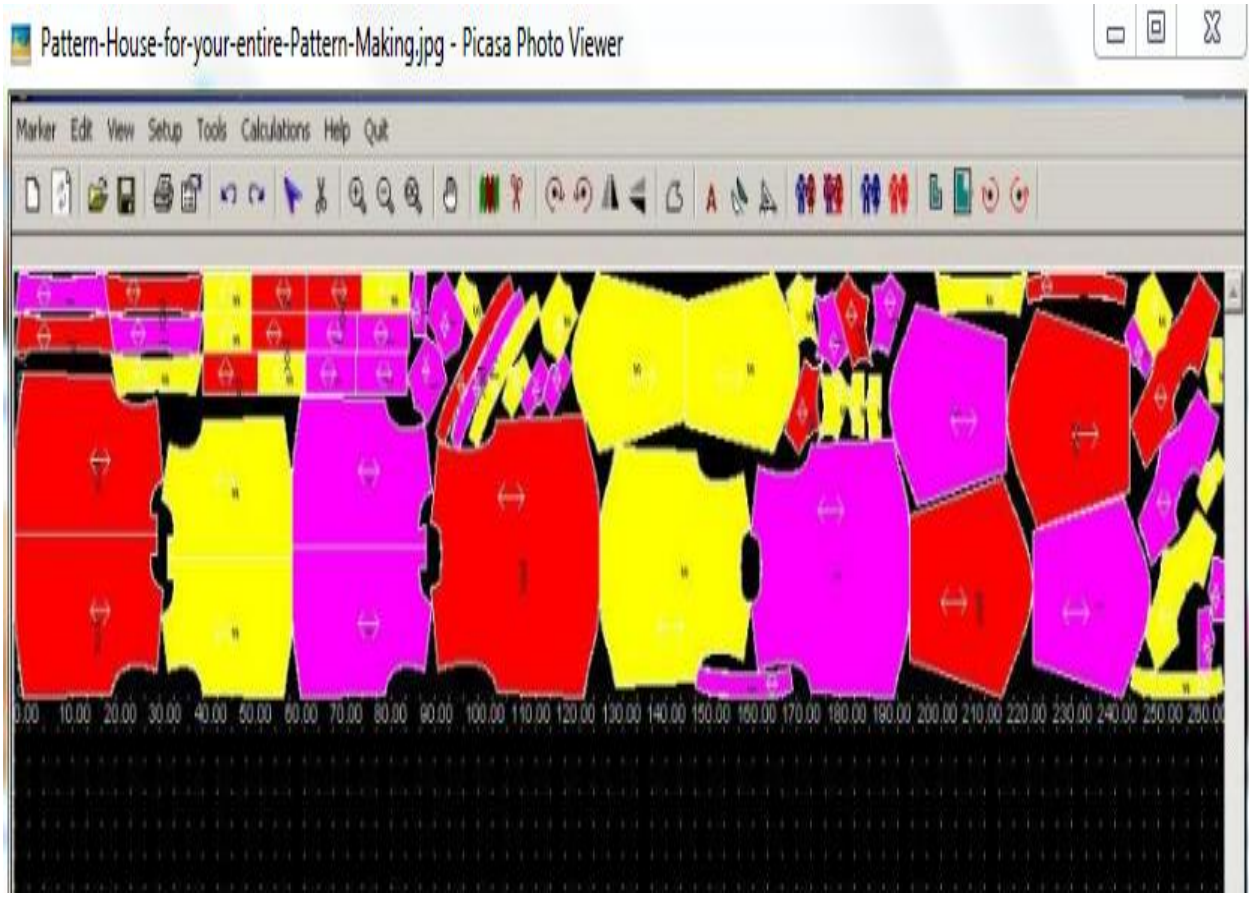

Figure 3. 4: Marker

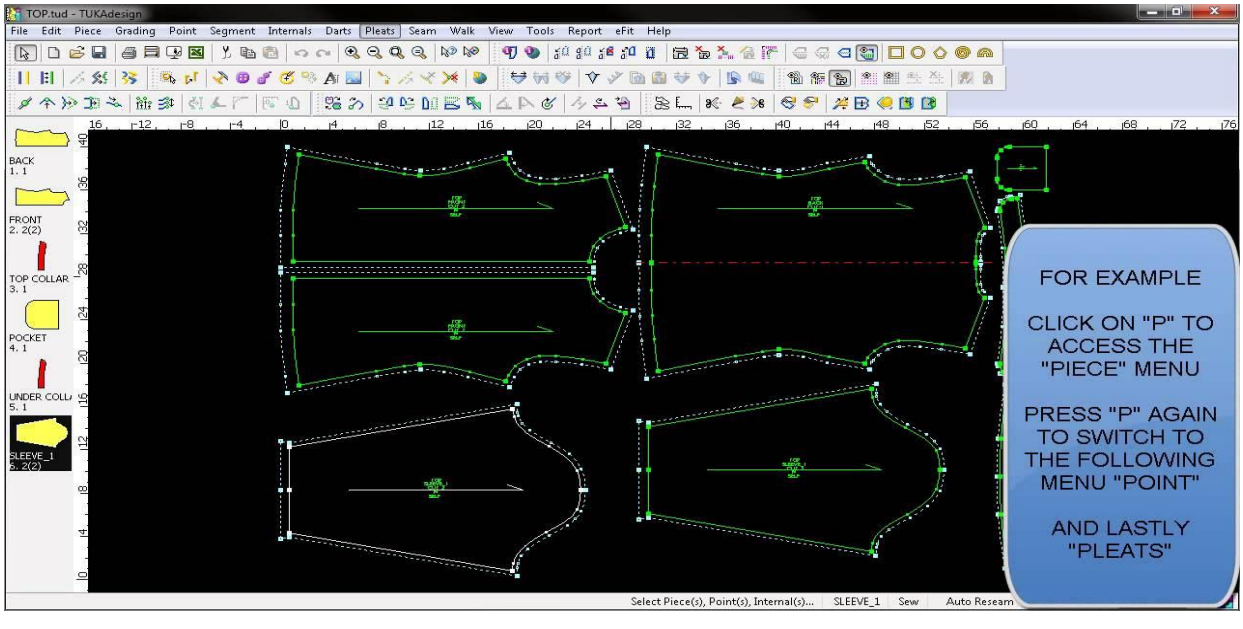

Figure 3. 5: Pattern grading

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3.2.11 Marker

After grading the samples. The design is inputted into the marker software. This software specifies how to set the pattern in the actual fabric. By using the marker software efficiently, fabric can be saved. KCL uses Gerber Garment Technology (GGT) for marker making.

3.2.12 Marker Efficiency

The ratio of area for pattern pieces that are placed on the marker to the total area of the marker expressed as percentage is called marker efficiency.
Marker efficiency is the important part of garments manufacturing. Direct cost of garments could be utilized by marker efficiency. Marker efficiency is calculated by two parameters:

1. Total area of the entire pattern in marker
2. Total area of the marker

It is calculated in percentage. It can be defined by following formula:

Marker efficiency = Area of the pattern in the marker / Area of the marker 100%

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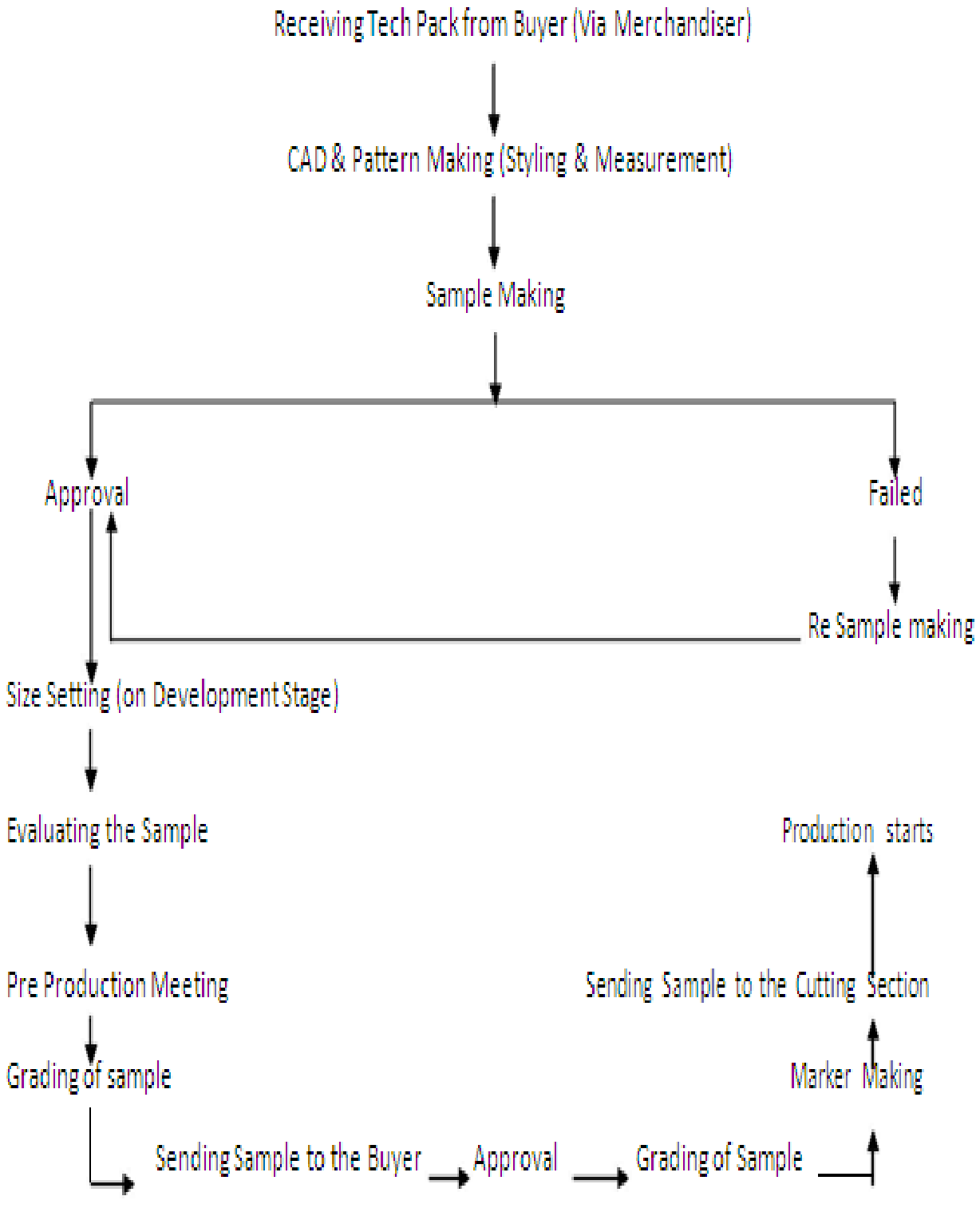
3.2.13 Sampling Requisition Flow Chart



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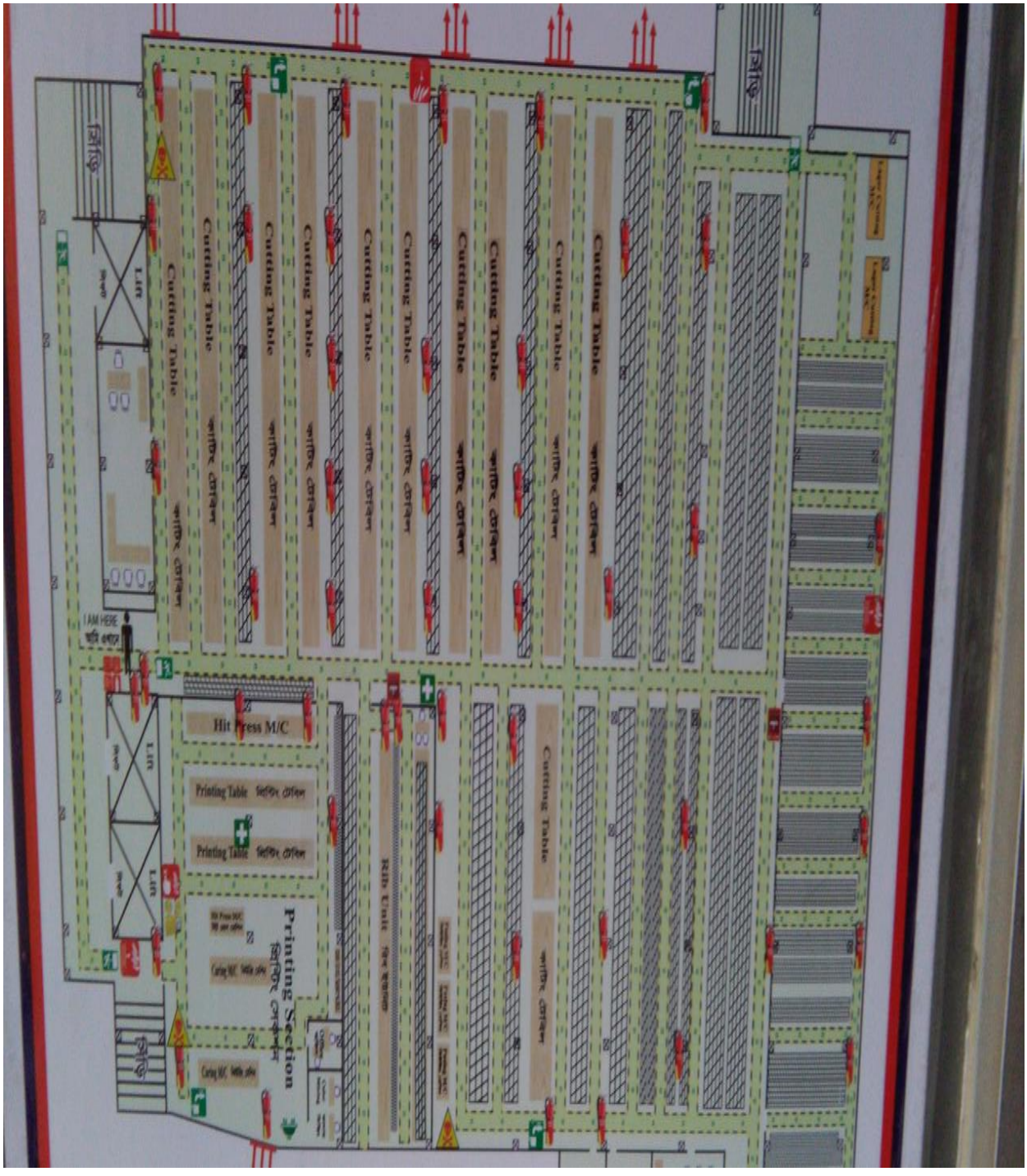
3.3 Cutting Section

3.3.1Layout



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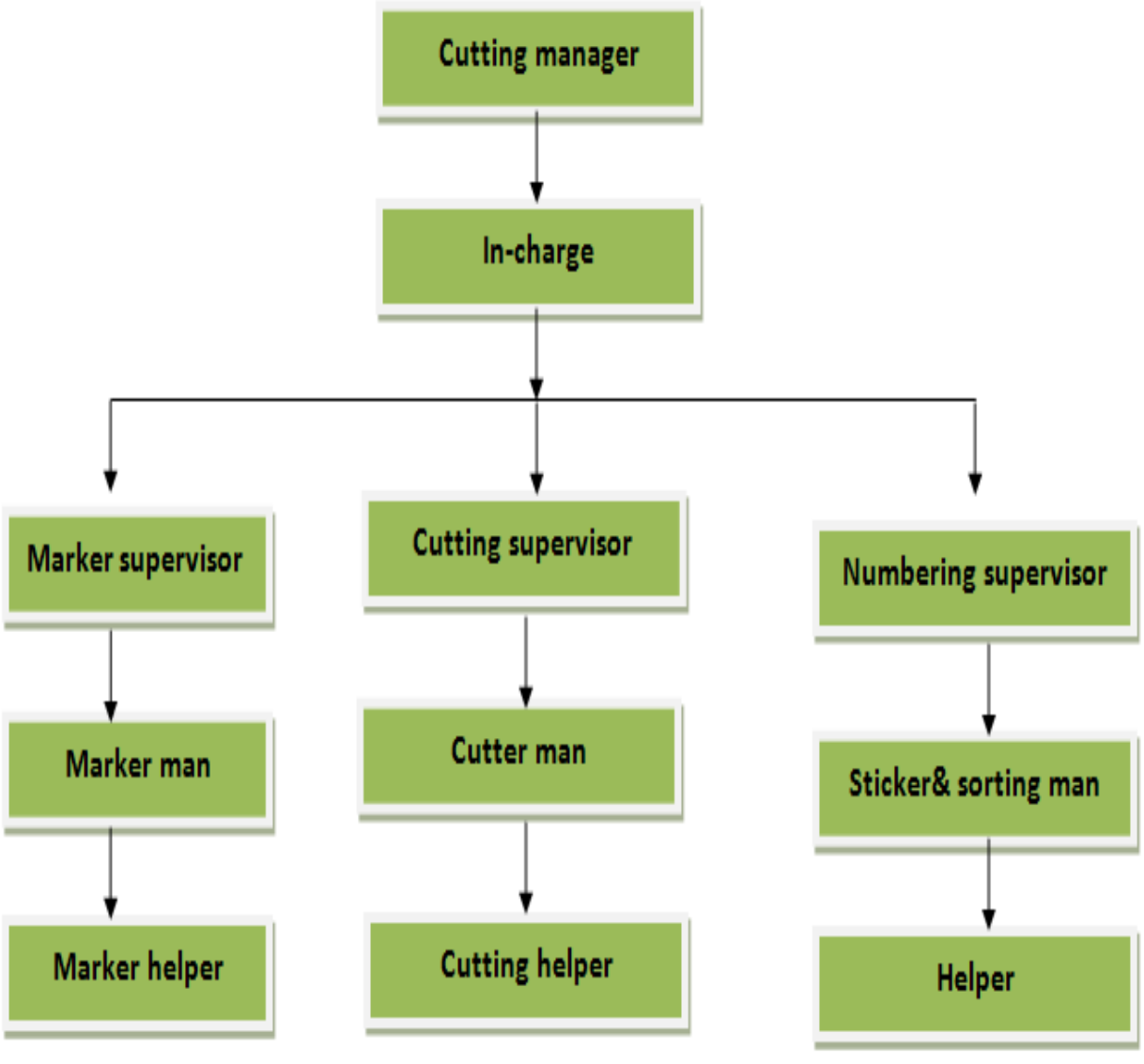
3.3.2 Organogram of Cutting Section



3.3.3 FABRIC CUTTING

Cutting is the major operation of the cutting room, when the spread fabric is cut into garment components. Of all the operations in the cutting room this is the most decisive, because once the fabric has been cut, very little can be done to rectify serious mistakes. Cutting can be done manually using powered knives or by computer-controlled system.

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3.3.4 PROCESS SEQUENCE IN CUTTING ROOM

Fabric requisition

↓

Shrinkage difference

↓

Break down ratio

↓

Marker requisition

↓

Marker Making

↓

Fabric Spreading

↓

Placing Marker Paper on to the Lay

↓

Fabric Cutting (Panel cutting) (Sorting, Bundling, Sizing)

↓

Numbering

↓

100% checking (Panel check)

↓

Mending / replacing if needed

↓

Bundling

↓

Input to Sewing Room

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3.3.5 List of Machines

Table3.14: List of cutting machine

Name of Machine	No. of Machine
Straight Knife Cutting M/C	10
Auto Cutter M/C	3
Auto Spreading M/C	6
Marker Printer	5
Auto Pattern Cutter M/C	1
Digitized Board	1
Total M/C	26

3.3.6 Cutting Table Specification

- Length of the spreading table: 25 yards4”
- Width of the spreading table: 94”
- Table type: Wood table
- No. of operator: 02
- No. of helper: 10
- No. of manual cutting table: 05

3.3.7 Spreading

Spreading is a process by which plies of fabric is spreaded in order to get required length and width as per marker dimension. This preparatory operation for cutting and consists of lying. In other words, spreading is the process of stacking of layers of fabric to allow simultaneous cutting. The marker is laid on the top most of the layers.

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3.3.8 Methods of Fabric Spreading

Knit Concern Group has well developed spreading process. They have both **Manual and Mechanical Method** available.

1. **Manual method:**

   In this method, fabric is laid completely by hand. This method is widely used in our country. A roll of fabric is taken and its edge is fixed on one end of the table and then spread on the table without using any device, completely by hand. A large number of workers are required to carry out this process.

Figure 3. 6: Fabric spreading by manually

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2. **Mechanical method:**

There is an auto spreader machine which has a ply cutting device with a automatic catcher to hold the end of the ply in place. In this method, spreading machine is running with the help of electrical and mechanical speed. It has some disadvantages among versatile advantages. Such as:

- High maintenance cost.
- Initial cost is high.
- It required high skilled operator.

Figure 3. 7: Fabric spreading by mechanical method

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3.3.9Description of Cutting Machine

1. Straight Knife Cutting Machine:

This is designed with a low center of gravity for ease of handling and features the best power to gravity weight ratio in the industry. It is designed for maximum productivity and minimum fatigue. It is suitable for cutting most light to medium weight fabric.

Figure 3. 8: Straight Knife Cutting Machine

Features of Straight Knife Cutting Machine:

- Possible to cut pattern pieces directly from the fabric lies.
- 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 attached grinding facilities.
- Blade height 8 to 10".
- Blade Width 1.5-3 cm

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- Blade Thickness ½ mm

Advantages of Straight Knife Cutting Machine:

- 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.
- Production speed is very good as up to 10 heights can be cut at a time.
- Fabric can be cut from any angle.

Disadvantages of Straight Knife Cutting Machine:

- 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.

2. Specification of Auto Cutter Machine:

- **Company Name:** IMA
- **Model:** 930, L-91
- **Software:** Formula
- **Rpm:** 3600
- **Vacuum:** 120
- **Production:** 25,000 pcs (per day)

Features of Auto Cutter Machine:

- Cutting knife itself moves according to the direction of computer memory.
- This machine is CAM system machine and works through CAD system.ght
- Compressor is used to run the machine.
- Four operators are needed.
- Cutting height capacity (6.5-7.5cm)
- Maximum 86 inch width can be cut.
- Auto Sharpen by using stone.
- Stone change after 6- month.

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Advantages of Auto Cutter Machine:

- Very fast cutting operation.
- Very active cutting by computer controlled system.
- Suitable for very large scale production.
- Cutting defects are less than others.
- Intensity of accident is low.
- Fabric can be cut 6-8 times than manual method.
- Less labor cost.

Disadvantages of Auto Cutter Machine:

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

3.3.10Numbering

After cutting the fabric, cut pieces are sorted out size and shade wise. All the components of same size are brought together and workers numbered with **Numbering Machine.** This is one of the most important operation in cutting section to prevent mixture.

Figure 3. 9: Numbering

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3.3.11 Quality Inspection and Replacement

After bundling, the cut pieces go to quality inspection room. Cut pieces are 100 % checked here. Rejected pieces are replaced by a new one. This inspection is done by Quality Assurance. After inspecting these pieces, it goes for sewing floor. Some fabric faults are found in this section which is given below:

- Hole
- Yarn contamination.
- Slub.
- Spot.
- Dirt mark.
- Crease mark.
- Miss stitch.
- Needle mark.
- Sinker mark.
- Naps.
- Oil spots.
- Crumple.
- Edge mar.
- Hairiness.
- Patchy.
- Shrinkage.
- Lycra out.
- Compacting.
- Arm hole.
- Neck fault.
- Barre
- Thick/ thin place.

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Figure 3. 10: Fabric Fault

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3.3.12 Bundling:

The checked components of one styles and in one size are now clubbed and bundled using ties. The size of bundle depends upon the requirement of the production plant. Each bundle contains pieces of the same style and same size only.

Figure 3. 11 Bundling

3.3.13 Sample of Bundling

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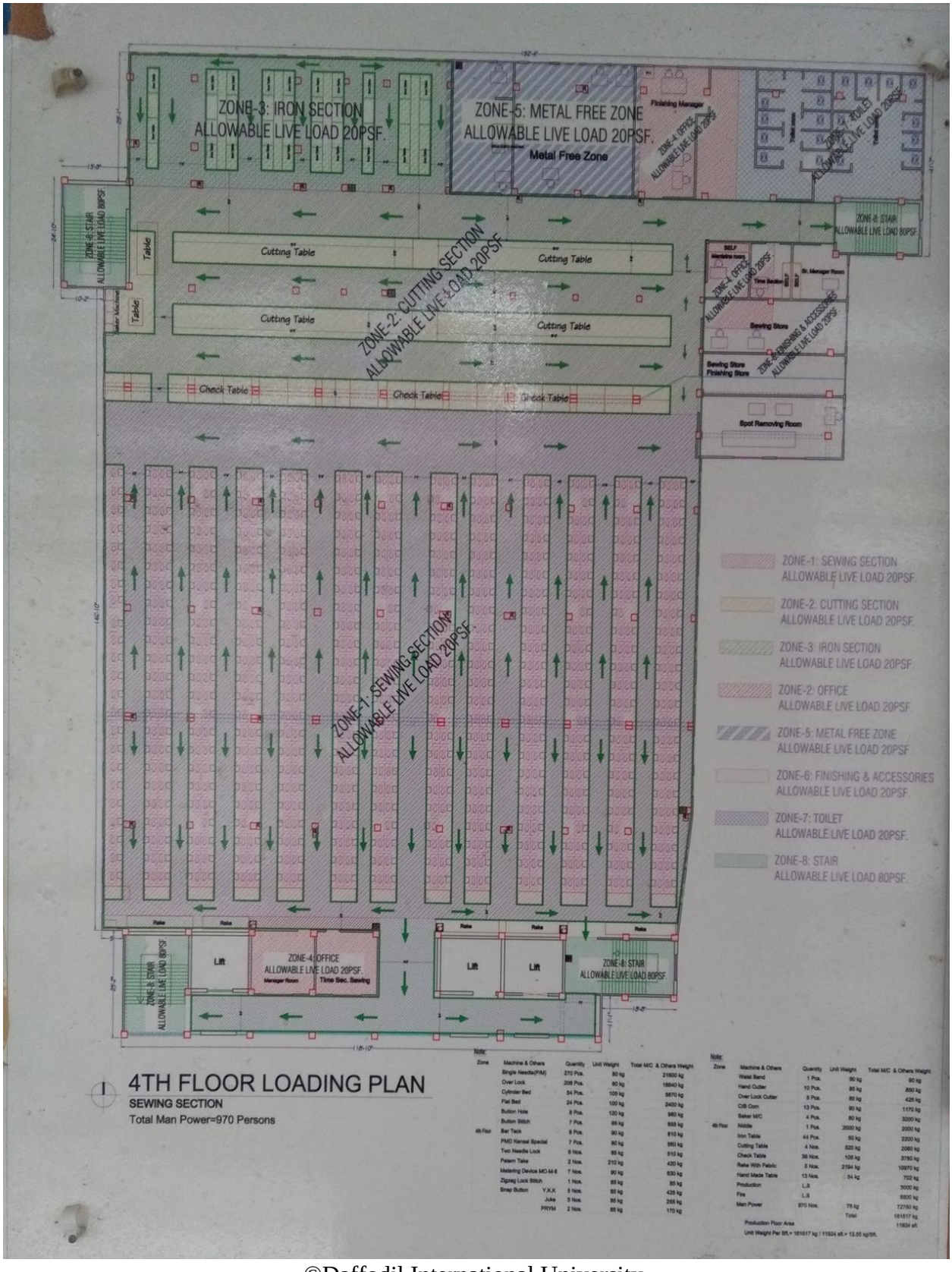
3.4 SEWING SECTION

3.4.1 Layout of sewing section



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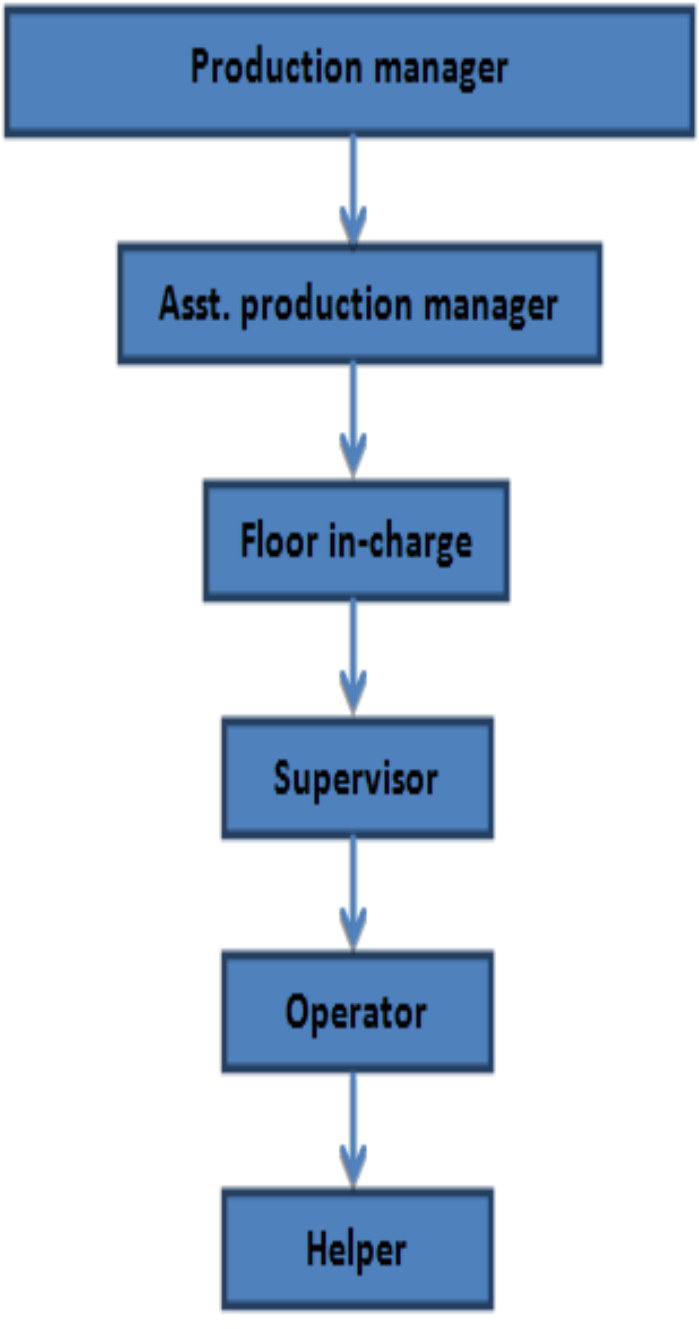
3.4.2 Organogram of Sewing Section



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3.4.3 No. of Machines used in sewing section

Table3.15: Specification of sewing machine

Machine type	Brand Name	Country of Origin	No. Of Machine
Single needle lock stitch M/C	JUKI	JAPAN	270
	BROTHER	JAPAN	
Over lock	JUKI	JAPAN	208
	BROTHER	JAPAN	
Flat bed	JUKI	JAPAN	24
	BROTHER	JAPAN	
Cylinder bed	JUKI	JAPAN	54
	PEGASUS	JAPAN	
Button Stitch	BROTHER	JAPAN	07
Button hole	JUKI	JAPAN	08
PMD Kansai Special	JUKI	JAPAN	07
Two Needle Lock	JUKI	JAPAN	06
Bar tack	JUKI	JAPAN	09
Back tape	JUKI	JAPAN	10
Snap button	JUKI	JAPAN	10
	Y.K.K	CHINA	
Zigzag machine	JUKI	JAPAN	05
Rib cutter	JUKI	JAPAN	18
Total			**629**

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3.4.4 Function of Sewing Machine in Knit Garments

Table3.16: Function of Sewing Machine

Machine Name	Function
Plain Machine:	Placket rolling, placket join with body, placket top stitch, back neck top stitch.
Over Lock Machine:	Shoulder seam attach, sleeve join, side seam attach, neck rib join with body that's must be over lock M/C.
Cylinder Lock Machine:	Sleeve hem, body hem, top stitch is done by this.
Flat Lock Machine:	Neck piping, sleeve piping, and leg piping.
Bar Tack Machine:	In garments where more tension is done here bar tack stitch is required as per buyer requirement.
Kansai Machine:	Neck top Stitch only for rib fabrics.
Button Attaching Machine:	It's used for button attaching with garments.

3.4.5 WORKING PROCEDURE OF SEWING DEPARTMENT:

Work flow of the sewing department of "Knit Concern Ltd." is given bellow:

Sewing is an operation by which the fabric cut panels are joined together by thread and gets the shape of a garment. Main responsibility of this department is to stitch fabric together in a standard way that it meets the needs of a buyer as a garment. As mentioned earlier this garment industry contains 18 sewing lines. These production lines are equipped with sound sewing machines. All the lines are functional and executing the function of sewing.

3.4.6 Sewing Defects

Like open seams, wrong stitching techniques used, same color garment, but usage of different color threads on the garment, miss out of stitches in between, creasing of the garment, erroneous thread tension and raw edges are some sewing defects that could occur so should be taken care of.

- **Skip Stitch**

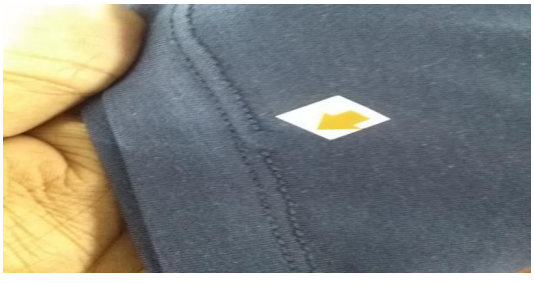

Figure 3. 12: Skip Stitch

Causes:

- ✓ If the distance between one loop to another loop is more.
- ✓ It the hook cannot pick the thread timely.
- ✓ If the tension varies in lopper and needle thread.

Remedies:

- ✓ The timing of hook or lopper with a needle should be adjusted properly.
- ✓ Adjust tension properly.

- **Broken Stitch**

Figure 3. 13: Broken Stitch

Causes:

- ✓ Used lower quality thread.
- ✓ The improper unwinding of thread from the package.

Remedies:

- ✓ Used higher quality thread.

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- ✓ The Proper unwinding of thread from the package.

➢ Seam Pucker

Figure 3. 14: Seam Puckering

Causes:

- ✓ When two or more plies of fabrics are sewn together then one ply will be feed more than other so uneven stitch takes place as a result seam pucker create.
- ✓ When two or more layers of fabric are sewn together then one layer shrinks more than others as a result different seam pucker is formed.

Remedies:

- ✓ The improved feed mechanism of the sewing machine.
- ✓ Skill operator so that he can handle the fabric properly.
- ✓ We have to test both fabrics shrinkage percentage before sewing and it should be less than 2%.

➢ Unequal/Unbalance Stitch

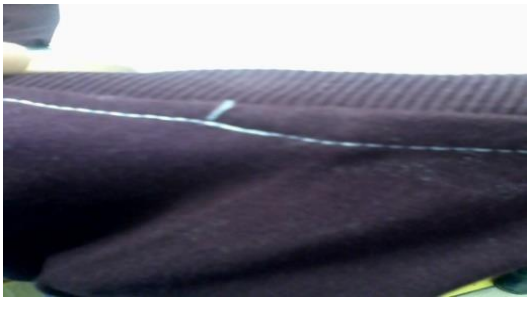

Figure 3. 15: Unbalance Stitch

Causes:

- ✓ Incorrect thread tension.
- ✓ Incorrect passage of thread.

Remedies:

- ✓ Adjust thread tension.

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- ✓ Correct the passage of thread.

➢ Open Seam

Figure 3. 16: Open Seam

Causes:

- ✓ Lack of sewing allowance.

Remedies:

- ✓ Taking proper sewing allowance.

➢ Fabric Damage at Seam Line

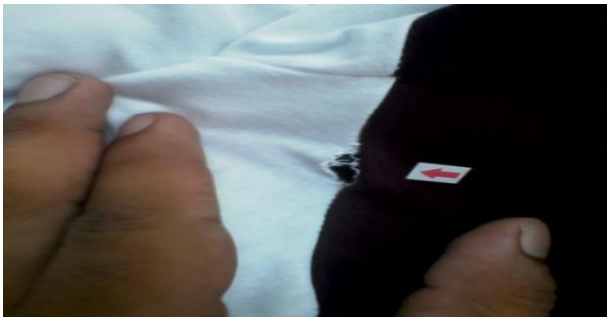

Figure 3. 17: Damage Fabric

Causes:

- ✓ Mainly due to needle damage we can see this type of fault at seam line.
- ✓ For this fabric damage, sewing strength becomes low and due to more fabric damage, fabric may be tearing off at the sewing line.

Remedies:

- ✓ Reduced machine or needle speed.
- ✓ Proper selection of needle size, point etc.
- ✓ Application of lubricant.

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3.4.7 Some Accessories Sample

Table3.17: Accessories Sample

100% cotton tape	Polyester/flaming thread	Elastic lace
Satin hanger loop	Silicon/mobilon tape	Lurex thread
Nylon zipper	Vislon zipper	Taffeta fabric
Eye lite	Repeat	Interlining/mash fabric

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3.5 Finishing Section

3.5.1 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.

3.5.2Process Flow Chart of Garment Finishing

Finishing input (style, color & size wise)
↓
Initial quality check
↓
Spot Removing
↓
Ironing/Pressing
↓
Inspection
↓
Hang tag
↓
Get up change
↓
Folding
↓
Poly
↓
Bar code (buyer wise sticker)
↓
Metal check
↓
Cartooning/Packaging
↓
Final inspection by buyer

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3.5.3 Work flow in the Finishing Section

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)

3.5.4 Machine Description of finishing section (Knit Concern Ltd.)

Table3.18: specification of finishing m/c

Machine	**No of Machine**
Steam iron	38
Metal detector	02
Thread sucker	04

3.5.5 Accessories used in garment finishing

- Neck board
- Back board
- Collar stand
- Butterfly
- Tie placket support
- M-clip
- Metal clip
- Cuff link
- Cable tie

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- Hang tag
- Tag pin
- Tissue paper
- Al pin
- Elastic clip
- Hanger
- Poly bag
- Size sticker
- Gun tap

3.5.6 Spot Removing

Spot removing is one of the special inspections which are done after initial quality check.

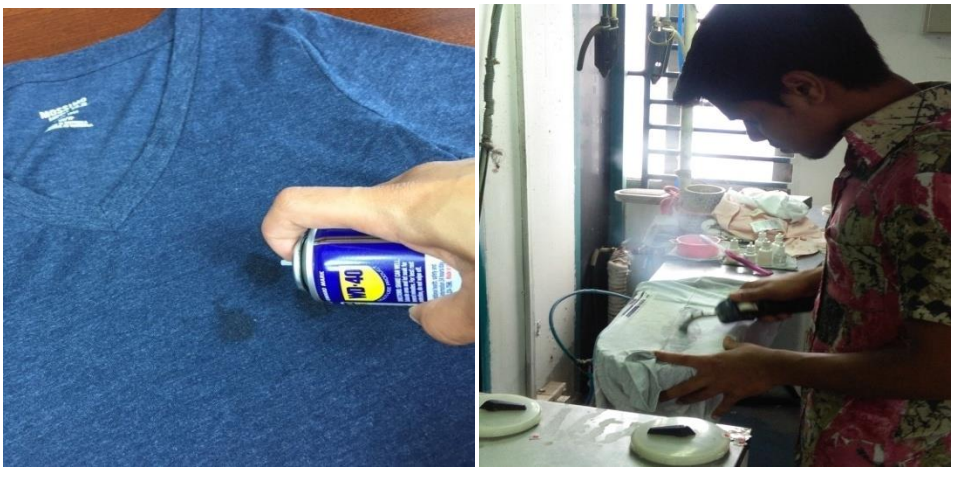

Figure 3. 18: Spot removing

3.5.7 Pressing

Pressing is a finishing process done by a cloth to heat and pressure with or without steam to remove creases and to impart a flat appearance to the cloth or garments. In garment industries pressing is also called ironing. After completing pressing the garments have to be folded.

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Figure 3. 19: Pressing proicess

3.5.8 Folding

After completing pressing, the garments are folded with a predetermine area. Garments are folded according to the buyer's direction, requirements in a standard area.

Figure 3. 20: Folding

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3.5.9 Packing

After folding, garments are packing the size of polythene packet is permanent. Specially, it is needed to ensure the placement of sticker in proper place.

Specification of poly bag according to buyer

Poly for H&M

Baby product: Length: 12+2(adhesive) inch Width: 8 inch

For adult: Length: 12+2(adhesive) inch Width: 12 inch

Poly for Okaidi & Obaibi jacket: Length: 12 inch Width: 10 inch

For baby set: Length: 12 inch Width: 9 inch

Figure 3. 21: Packing

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3.5.10 Barcode

Barcode is a specially Buyer wise sticker.

Figure 3. 22: Barcode

3.5.11 Metal Check

Checking the metal type component into the garments or with its accessories like button, zipper etc. is called metal check.

Figure 3. 23: Metal Check Machine

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3.5.12 Cartooning

At last cartooning or packing the garments according to Buyer comment. The process of packing of inner boxes entered into the carton is called cartooning. The carton is properly warped by the scotch tape.

Figure 3. 24: Cartoning

3.5.13 Final inspection

Final inspection is made by buyer. He checks the garments according some rules likeAQL.

Figure 3. 25: Final inspection

3.6 WASHING SECTION

3.6.1ORGANOGRAM of washing section

Dyeing Manager

↓

Manager Dyeing

↓

Deputy Manager Dyeing

↓

In charge

↓

Supervisor

↓

Helper

3.6.2List of Machines

Table3.19: Specification of washing m/c

Type	**Origin**	**Brand**	**Capacity**	**MC. QTY.**
Industrial washing machine	Italy	Tonello	400 kg/ mc	11 Nos.
Tumble Dryer	Italy	Tonello	400 kg/ mc	07 Nos.
Hydro Extractor	Italy	Tonello	400 kg/ mc	03 Nos.
Pigment Dyeing	Italy	Trivanta	9, 00-1,200 pcs.	01 Nos.
Garments Dyeing	Italy	Trivanta	30,000-50,000 pcs.	01 Nos.
Deep Dyeing	Italy	Trivanta	2,500-3,000 pcs.	02 Nos.
Total				25 Nos.

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3.6.3 Different types of washing

- Normal wash.
- Enzyme wash.
- Silicone wash.
- Soft wash.
- Acid wash.
- Hard/dry wash.

3.6.4 Working Flowchart of Washing Section

Received goods from sewing floor

↓

Shade checking before wash

↓

Washing

↓

Hydro extractor

↓

Drying

↓

Checking shade variation

↓

If shade variation then it goes to washing

↓

Delivery

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3.6.5 Washing Process of Normal Wash

The normal washing process for a sample of 05 kg knit fabrics or garments.

1st Step:

- Lot size: 05 kg
- Add water (R: L= 1:8): 40 liters.
- Machine running
- Add softener: 1.8 gm/l
- Add detergent: 1.0 gm/l
- Temperature: 600 C
- Time: 15 minutes
- Drain liquor.
- Cold wash.

2nd Step: Hydro extraction to remove water from fabric.

3rd Step: Garments are placed in steam dryer.

4th step: Unload the lot.

Figure 3. 26: Washing m/c (front loading)

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Figure 3. 27: Washing m/c (Side loading)

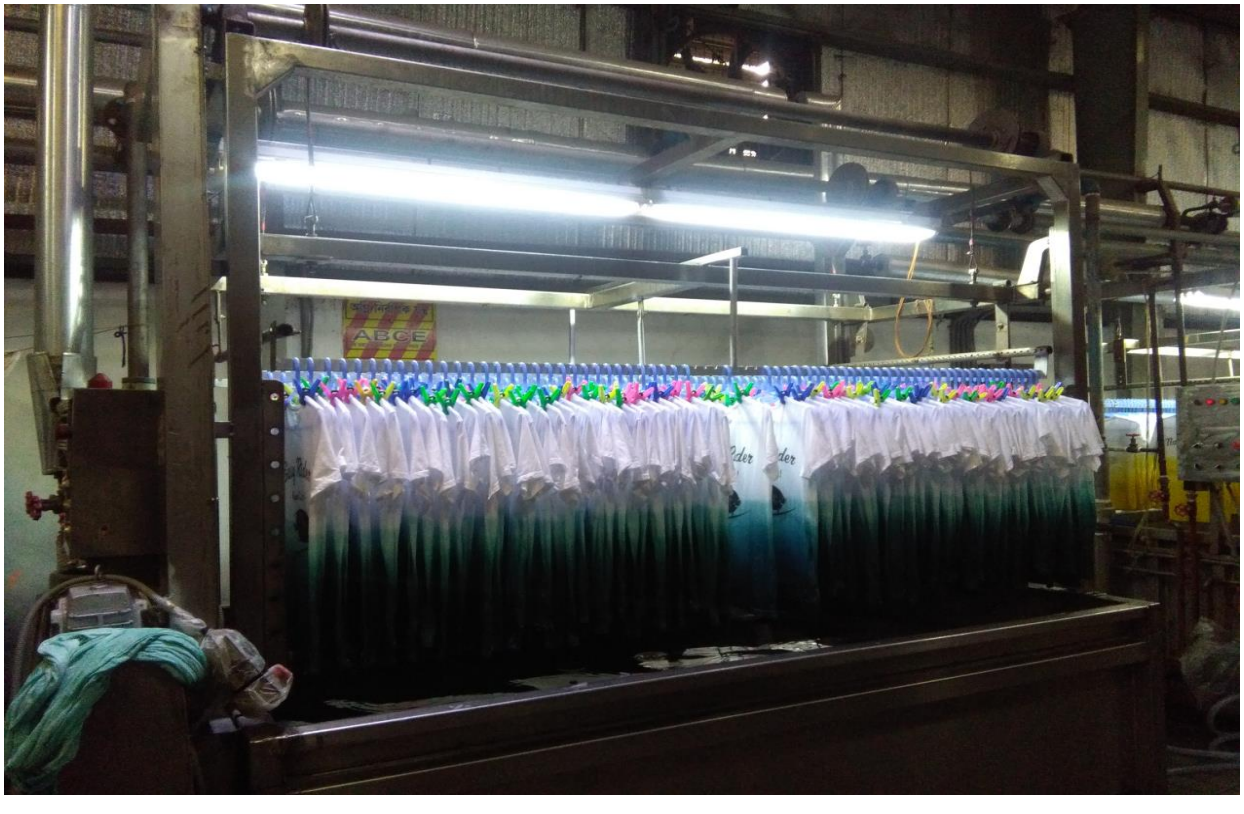

Figure 3. 28: Deep Dyeing

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Figure 3. 29: Hydro Extractor

Figure 3. 30: Dryer machine

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3.7 ETP

3.7.1 EFFLUENT TREANTMENT PLANT (E.T.P.):

The Effluent which is treated by a plant that is called Effluent Treatment Plant. In fact, wateris the heart for dyeing Industry and chemical also an important element for different stage ofdyeing. Now, it is quite impossible without chemical continue dyeing. So, which chemicalwe use in Dyeing that mixed with water and finally drain.

3.7.2 Types of E.T.P:

There are different types of E.T.P are available .Those are

- Biological E.T.P.(Best)
- Chemical E.T.P.
- Biological & Chemical E.T.P.
- Physical ETP

Biological E.T.P.:

- The Effluent will be treated according to sequence or stage by stage.
- Its primary cost or set up cost is very high.
- Its effluent treatment will be best.

3.7.3 KNIT CONCERN LTD E.T.P.:

- Cost of the project is nearly 8, 00, 00,000 BDT.
- Fully Biological E.T.P.
- Manufactured by Water Treatment Technology (W.T.T.) of ITALY.
- 60 lac liters storage capacity
- 30 lac liters processing capacity

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3.7.4 Project Description:

Table3.20: Function of equipment

Tank/Unit	Function
1. Screen Brush	Big particle & materials remover.
2. Lifting Pump Unit	Automatic flow lifter with level-censored pumps.
3. Storage & Homogenizing Tank	●mixing by air circulation ● reduce temperature ●convert dissolved particles into suspension ● storing for 24 hrs. ●pH 11-12
4. Neutralization tank	●To neutralize the alkalinity by dozing sulphuric acid (98%) ●pH 7-9
5. Distributor tank	● Passes & store the neutralized effluent water. ●Sludge return
6. Biological & Oxidation Tank	●Different types of micro-organisms are cultured. ●Separate organic, inorganic & synthesized particles ●Dye particles are eaten by micro-organisms ●pH 7-8.5
7. Sedimentation feeding tank	DE coloration of existing color particles & feed to sedimentation curve.
8. Sedimentation curve	Three section- ➢ separator ➢ clarifier ➢ scrapping bridge
9. Sludge return pump slump	Sludge is thickened & residue passed into distributor tank.
10. Sludge thickener	Sludge condensed & made cake.

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3.7.5 Plant Equipment:

1. Screen Brush
2. Lifting Pump
3. Storage and Homogenizing Tank
4. Neutralization
5. Distributor
6. Biological Oxidation
7. Sedimentation Feeding Tank
8. Sedimentation
9. Sludge Return Pump
10. Sludge Thickener
11. Blowers
12. Chemical Reagents
13. Flow Meter
14. Main Switch Board
15. Air Left
16. Filter Press

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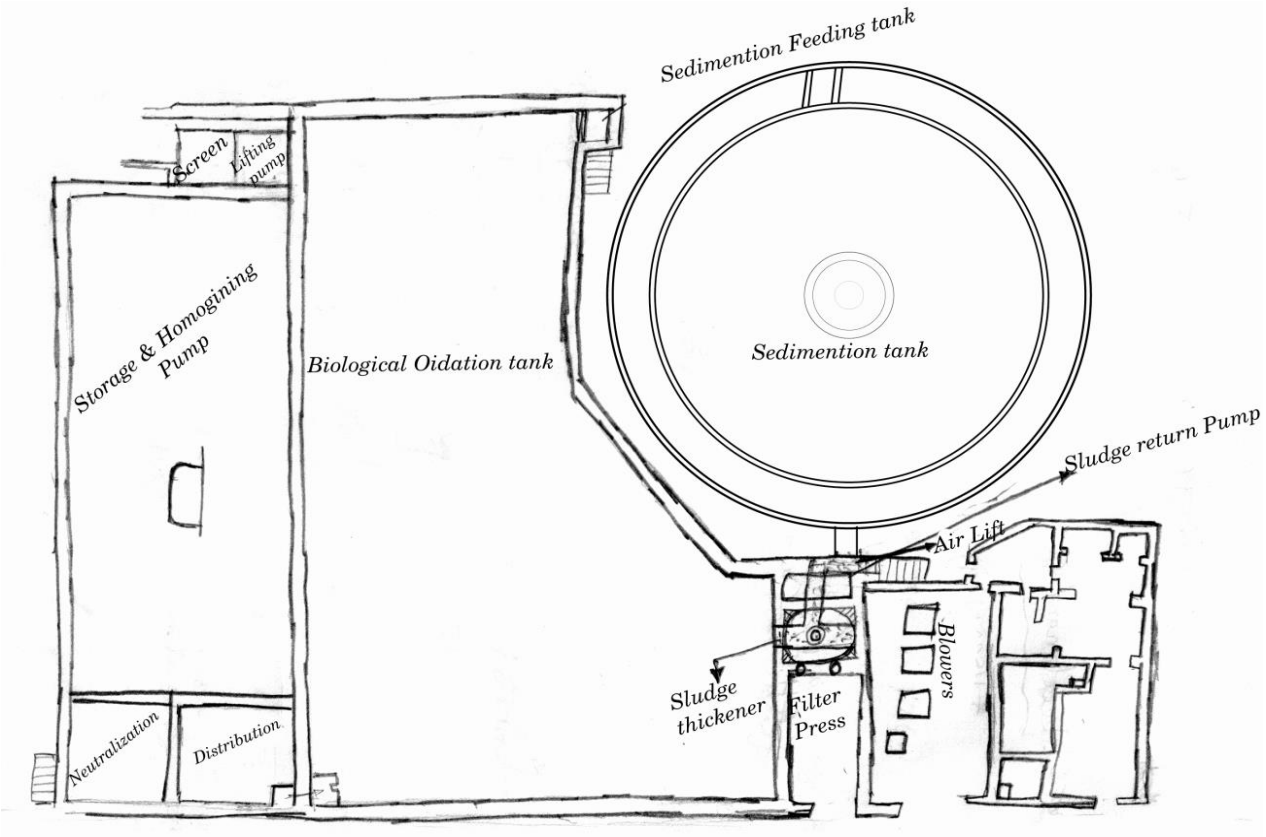

Fig : Layout plant for ETP

3.7.6 Chemical used in different Section:

1. Antifoam - Biological tank
2. Decolorant - Sedimentation feeding tank.
3. Nutrient Salt - (Urea & TSP) - Biological Tank
4. Polyelectrolyte - Sludge Thickener
5. Sulphuric acid - Neutralization tank
6. Na (OCl) - Biological tank

3.7.7 Function of different chemicals:

Chemicals	Function
H_2SO_4	Neutralize the water by controlling pH.
	It is auto dispensed in the neutralization tank.
Polyelectrolyte	Used for sedimentation/sludge coagulation.
	It is used auto/manually in sludge thickener

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	tank.
Decolorant	Used for removing color.
	It is used auto/manually in sludge thickener tank.
Anti-foaming agent	Used for reducing/controlling foam.
	It is used auto/manually in the oxidation tank.
Sodium hypochlorite	It is used to killing harmful bacteria/insect.
	It is used in the Biological Oxidation tank.
Nutrients Salt	when bacteria become weak it is added to a certain quantity
	It is added in the oxidation tank.

3.7.8 Types of micro-organisms used in KCL:

1. karina bacterium
2. caricina bacterium
3. zoogloea bacterium
4. vorticilly bacterium
5. filamention bacterium
6. cocci bacterium

3.7.9 Object of ETP:

- To remove coloring matter.
- To control PH.
- To maintain proper value of BOD and COD.

Manufacturer Company Name: Panta Rei Srl

Country of Origin: Italy

Capacity: 125 m^3

Built Year: 2007

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3.7.10 Process Sequence:

Screen

↓

Lifting pump sump

↓

Storage and homogenizing tank

↓

Neutralization tank

↓

Distribution tank

↓

Biological oxidation tank

↓

Sedimentation feeding tank

↓

Sedimentation tank

↓

Sludge return pump sump

↓

Sludge thickener tank

↓

Filter process

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Figure 3. 31: ETP plan

Volume of Tank:

- Storage and homogenizing tank: 6000 m
- Biological oxidation tank: 8600 m

No of Blower:

- Three for Biological oxidation tank
- One for Storage and homogenizing tank.

3.7.11 Specification of the Blower:

- R.PM: 2966
- Volt Required: 400 V
- Required Frequency: 50 Hz
- Power required: 55 kW/hr
- Volume of production airflow: 1415 m/hr

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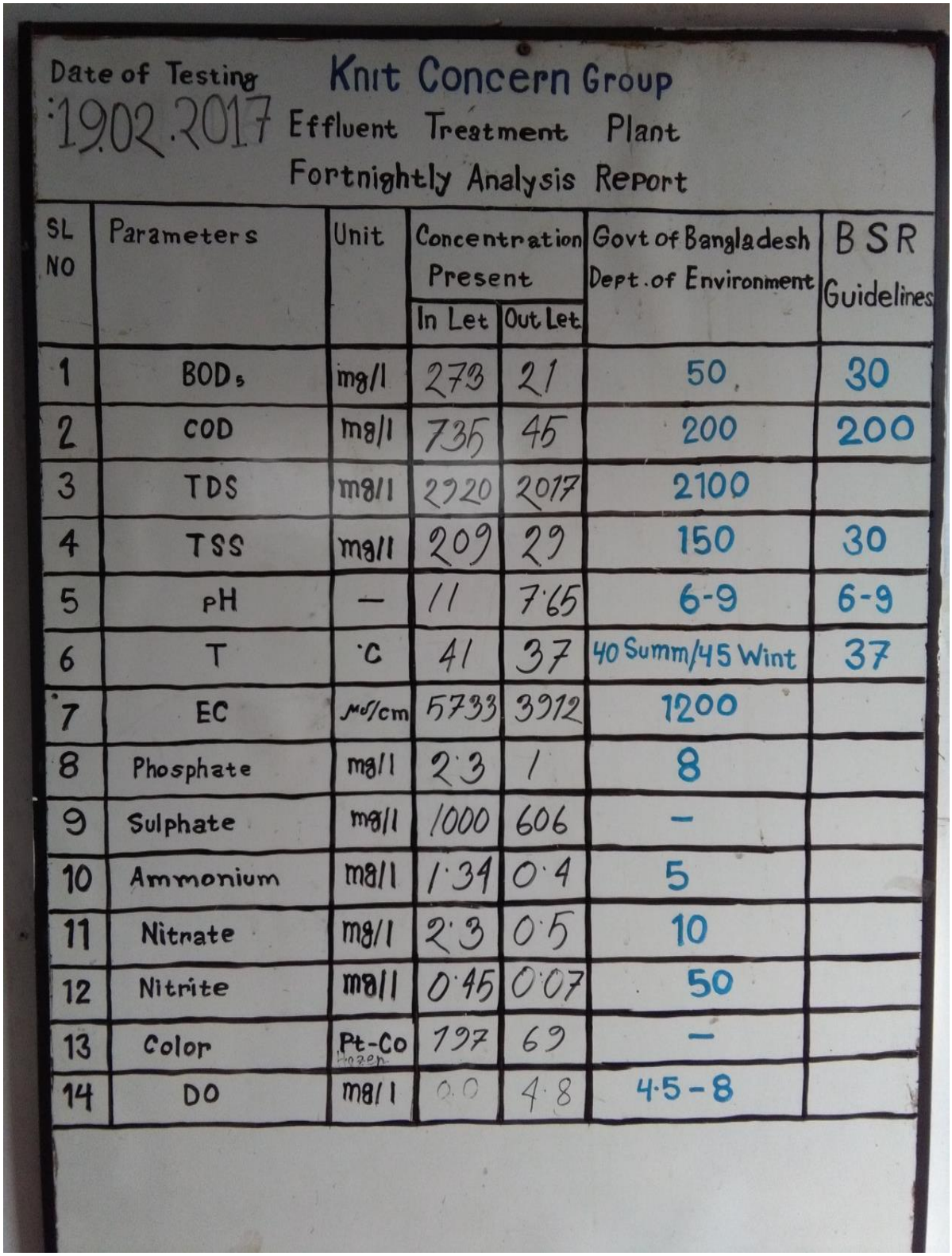
3.7.12 Standard Testing Parameters:



Date of Testing :19.02.2017

Knit Concern Group
Effluent Treatment Plant
Fortnightly Analysis Report

SL NO	Parameters	Unit	Concentration Present		Govt of Bangladesh Dept. of Environment	BSR Guidelines
			In Let	Out Let		
1	BOD5	mg/l	273	21	50	30
2	COD	mg/l	735	45	200	200
3	TDS	mg/l	2920	2017	2100	
4	TSS	mg/l	209	29	150	30
5	pH	—	11	7.65	6-9	6-9
6	T	°C	41	37	40 Summ/45 Wint	37
7	EC	μs/cm	5733	3912	1200	
8	Phosphate	mg/l	2.3	1	8	
9	Sulphate	mg/l	1000	606	—	
10	Ammonium	mg/l	1.34	0.4	5	
11	Nitrate	mg/l	2.3	0.5	10	
12	Nitrite	mg/l	0.45	0.07	50	
13	Color	Pt-Co Hazen	197	69	—	
14	DO	mg/l	0.0	4.8	4.5-8	

Figure 3. 32: Stander testing parameters

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3.8 COMPLIANCE

3.8.1 Definition:

Compliance means conformity of certain standard. Knit Concern ltd. Maintain a moderate working condition for their employees. Though it is well established project, there is some lacking of proper compliance issues**.**

3.8.2 List of Compliance issues:

Here is the list of compliance in which some points are maintained fully and some are partially.

- Compliance for holiday
- Leave with wages
- Time care
- Health register
- Accident register
- Working register
- Equal remuneration
- National festival holiday
- Overtime register
- Labor welfare
- Sexual harassment policy
- Child labor abolition policy
- Anti-discrimination policy
- Working hour policy
- Environment policy
- Security policy
- Buyers code of conduct
- Canteen
- Health and safety committee

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Health:

- Drinking water at least 4.5L/day/employee.
- Cup availability.
- Drinking water supply.
- Water color, heater available in canteen.
- Drinking water vassal cleans at once in a week.

Fire Safety:

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

Toilet:

- Separate toilet for woman & men
- A seat with proper privacy and lock facility
- Effective water sewage system
- Soap toilet
- Water tap
- Toilet white washed one in every day.

Safety Guard:

- Metal glows on good condition
- Rubber mats and ironers
- First aid box one
- First trained employees
- Motor/needle guard
- Doctor
- Welfare officer.

Others:

- Room temperature.
- Lighting facilities.

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3.9 Utility Sections

Major Utilities Used In KCL Dyeing Are:

1. Water
2. Electricity
3. Steam
4. Compressed Air

3.9.1 Water

The major concern for any kind of wet process industry is 'Water' because it is the quality of water which determines the quality of dyeing. Water quality generally vary in different areas, also depends on the level or height of water level beneath the ground. In Narayangonj water level is around 130-140 ft but Knit Concern dyeing water is lifted from about 600 ft deep by submergible pumps.

Water Treatment Plant:

Three Water Treatment Plants in Knit concern.

Plant 1&2: KCL Knit dyeing – Capacity 250000 lit/hr

Plant 3: KCL Yarn dyeing – Capacity 150000 lit/hr

In plant 1&2: Raw water tank capacity – 288222 lit & 660000 liters.

Treated water Reserve tank capacity – 960000 liters.

Sequence of water treatment plant

- Iron remover (sand used)
- MGF/ACF/ TDS remover (carbon used)
- Softener (resin used)

Plant Description: Demineralization by Resin treatment

Three vessels system – Vessel – 1 – Multi-Grade Filter (MGF) – For Iron Removal

Vessel – 2 – Activated Carbon Filter (ACF) – For TDS removal

Vessel – 3 – Softener Filter (SF -Resin) – For Hardness removal

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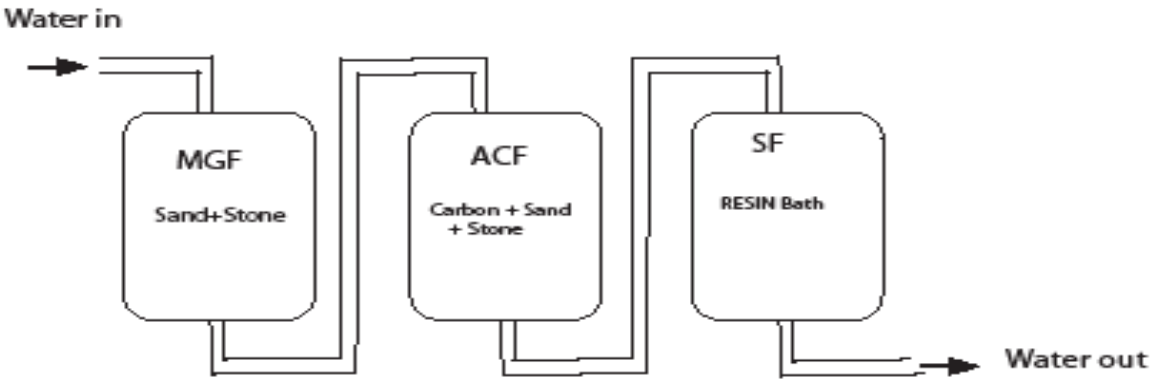

Water Demineralization Treatment Plant

Figure 3. 33: Water Treatment Plant

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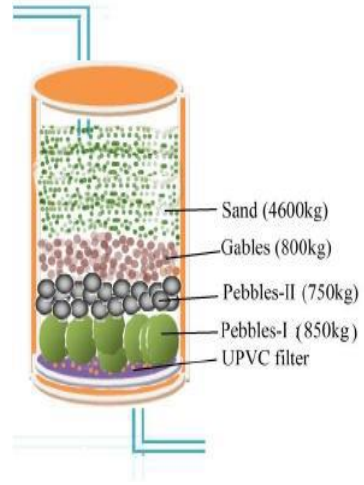
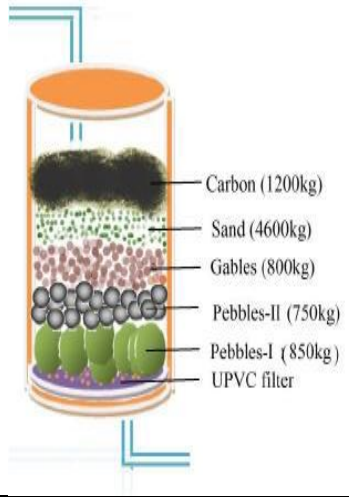
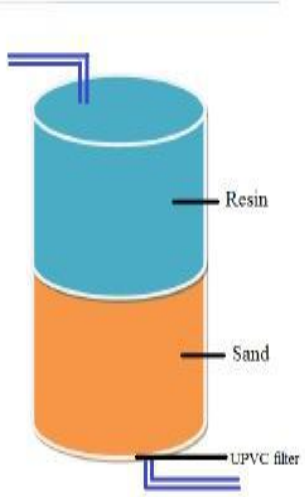
Multi-Grade Filter (MGF)	Activated Carbon Filter (ACF)	Softener Filter (SF -Resin)
		

Water distribution system:

- By booster pump treated water is supplied to the dyeing m/c pipe line, where, 4 kg pressure is always kept constant by automatic controlling of booster pumps.
- Total 3 sets of booster pumps each contain 6 pumps.
- Water is drawn by the m/c by centrifugal pumps.

3.9.2 STEAM BOILER

Steam:

Steam is an important utility for dyeing section. Steam produced by the boiler Supply water is simply treated in the boiler section by the two softener tank Then water reserves to the feed water tank & this feed water tank warms the water then water passes to the boiler which produces steam & that steam supplies to the factory.

Main parts of the boiler:

- Gas Chamber
- Blower
- Gauge glass
- Safety valve
- Burner

Specification of boiler Machine:

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No of boiler: 03

Type of boiler: Horizontal, Fire tube boiler

LOOS STREM BOILER MACHINE

Brand: Germany

Capacity: 10 ton/hr

Fuel: Natural gas, Diesel.

Steam Consumption: 2300 kg/hr for 1200-1500 products.

Steam pressure: 7-8 bar

Water pressure: 3-4 bar

Steam temp: 180°-190°C

Boiler Temp: 300°C

Feed water Quality: pH – 7-8

TDS – 430-530

Hardness - <2 ppm

Power Consumption: 40

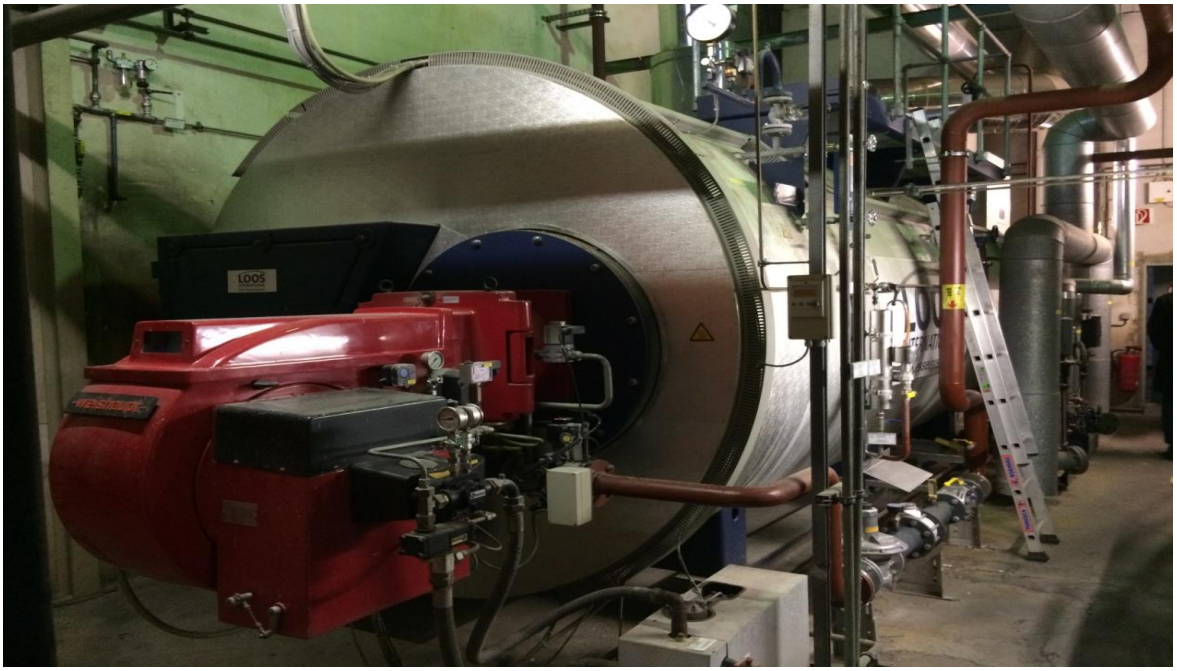

Figure 3. 34: LOOS stem boiler machine

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3.9.3 ELECTRICITY/GENERATOR

- Total Generator: 4
- Types:
  - Diesel Generator – CAT (USA) – capacity – 1710 KW
  - Gas Generator – WAVKESHA – Capacity – 1100 KW (2) & 900 KW

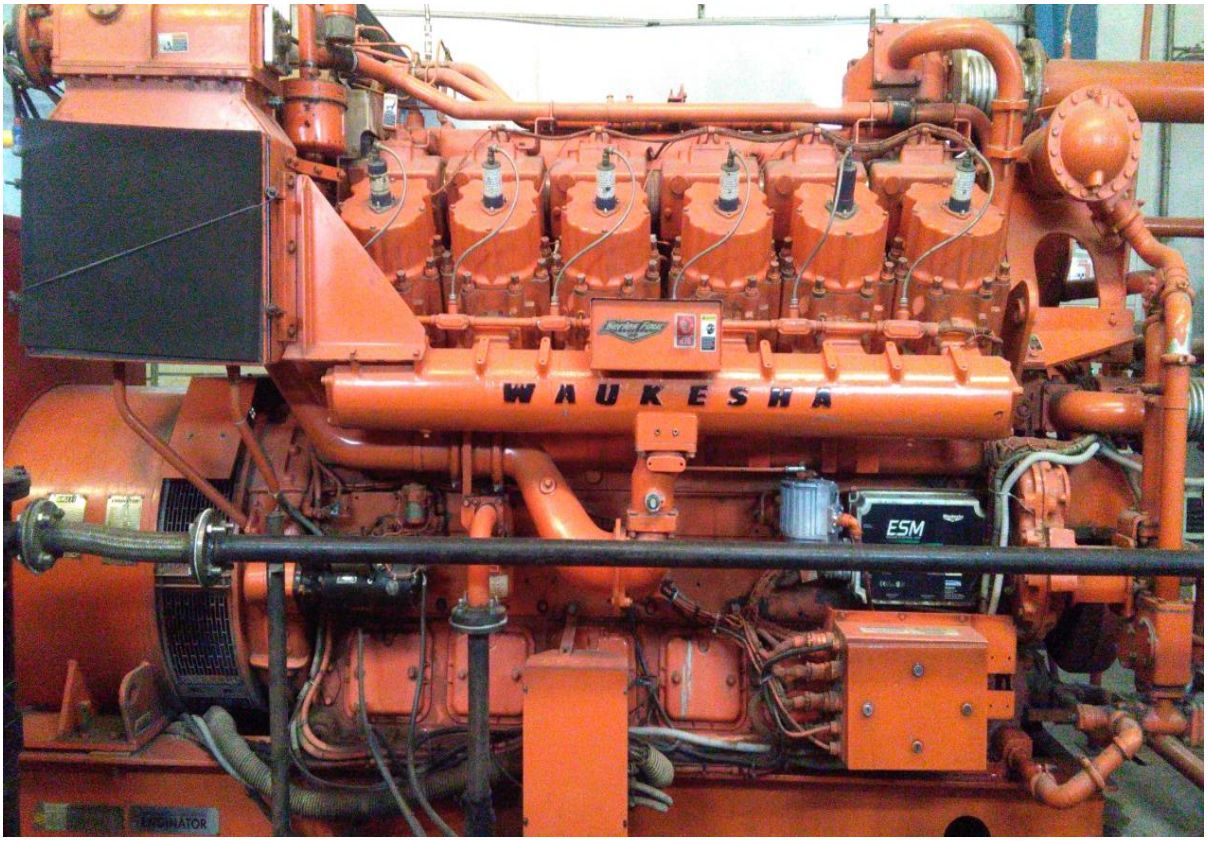

Figure 3. 35: Generator machine

- Gas Generator used in KCL
- Total Requirement – 2-2.5 MW/day (3500-4000 kAmp current)
- Total Output of Three Gas generators – 2100-2500 kw.
- Pressure required for Gas generators – 222 kpa for 1100 kW& 145 kpa for 900 kW.
- Line Pressure – 13 to max 145 kpa

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3.9.4 Compressed Air/Compressor

Natural gas is drawn by pipe through the filter above the compressor & the air is compressed. In such a case the air becomes slightly hot. Hence cold water is drawn to reduce the temperature of compressed air. Thus the cold water becomes slightly hot & goes through outlet pipe to the overhead reservoir.

The moist compressed air is transferred to the dryer& a slight warm compressed air is delivered to require sections of KCL.

Specification of Compressor

Source: Natural Air

M/C Name: Compressor

Brand: BOGGE (Germany), CECATTO (ITALY) .

No of m/c: 04

Capacity: 27, 0001/hr., 1800 1/hr.

Unloading pressure: 7.2 bar

Loading pressure: 5.6 bar

Chemical Used: Grease, Oil etc.

Figure 3. 36: Compressor

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4. IMCACT OF INTERNSHIP

4.1 KNITTING SECTION

- Have known different types of knitting machine.
- Known the function of different parts of the knitting machine.
- Learn how to operate knitting machine.
- Knitting faults & remedies.

4.2 SAMPLE SECTION

- Have known the working environment.
- Observed how skilled workers work in sample section.
- Learned the process of preparing a pattern for an individual size & design.
- To develop sample making procedure.
- Learned about the digitizing board in CAD room.

4.3 FABRIC CUTTING SECTION

- Learned different processes used in cutting section
- Learned about different type of cutting machines (i.e. Straight knife cutting machine, Round knife cutting machine, Band knife cutting machine etc.).
- Learned the process of fabric spreading.
- Observed the process of fabric cutting according to the marker.
- Understood different process of fabric lay.
- Realized the use and importance of metal gloves for fabric cutting process through different cutting machines.

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4.4 SEWING SECTION

- Learned about different type of machines used in a sewing floor (i.e. Single or double needle lock stitch machine , Multi needle chain stitch machine, Over lock machine, Feed of the arm machine etc.)
- Observed different sewing or joining process Garments
- Learned about Standard Minute Value (SMV) of different sewing
- To know about machine Acquainted.
- Operation of Sewing Process.
- Idea about work-culture of Sewing Section.
- Sewing faults & remedies.
- Breakdown of sewing procedure.

4.5 IMPACT OF FINISHING SECTION

- Observed various type of finishing process after sewing and washing
- Observed different type of machines used in finishing section (i.e. Neck press machine, Metal detector machine
- Learned about different type of iron machines
- Learned about various type of accessories used to attach to the garment (i.e. Security alarm, Hang tag, Price tag, Barcode label etc.)
- Observed the application of different chemicals for the removal of type of stain
- Understood the basic difference between gross weight and net
- Shade variation checking method
- Oil spot removal
- Label attaching process
- Ironing process
- Folding and packing
- Packaging process of different types of garments.

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4.6 WASHING SECTION

- Acquainted with machine used in washing section.
- Operation of Washing Process.
- Idea about work-culture of Washing Section.
- Washing Process.

4.7 ETP

- Idea about Function of ETP.
- Function of different Chemicals.
- Importance of ETP.

4.8 COMPLIANCE

- Different Compliance Issues.
- Idea about Maintenance Complained Issues.
- How following Compliance issues in different section.
- Policies of knit Concern Ltd.

4.9 UTILITY & MAINTENANCE

- Acquainted with machine used in Utility & Maintenance section.
- Operation of Utility & Maintenance Process.
- Idea about Function of ETP, WTP, Boiler etc.
- Function of different types machine list used in Knit Concern Ltd.

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5. Conclusion

I have completed my Industrial Training successfully by the grace of Allah. Industrial Attachment sends me to the expected destiny of practical life. Knit Concern Group is one of the best factories in the textile field of Bangladesh. The completion of the six weeks taughtme the inspiration that factory is one of the appropriate destiny to implement the theoretical knowledge. From this industrial attachment I got the details idea about the factory environment, inventory process, maintenance, utility etc.

Knit Concern Group is well equipped and the working environment is excellent. The relation between top management to bottom level is so nice. I am lucky to get the opportunity of having training in this mill. The factory runs by a number of efficient Textile Engineers, Skilled technical &Non-technical persons.

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