



Daffodil
International
University

INDUSTRIAL ATTACHMENT REPORT (TE - 431)

On

MONDOL GROUP

Cotton Club (BD.) Ltd. (Knit Composite)
South Jorun, Kashimpur, Gazipur-1700, Bangladesh

Academic Supervisor:

Ms. Nawshin Farzana
Assistant Professor
Department Of Textile Engineering
Daffodil International University

Submitted By:

Md. Mizanur Rahman
ID: 161-23-223

Soumitra Roy Prince
ID: 161-23-225

Imran Hossain Lotus
ID: 133-23-207

This Industrial Attachment submitted in partial fulfilment of the requirements for the degree of

Bachelor of Science in Textile Engineering

Advance in Wet Processing Technology

Fall - 2019

DECLARATION

We hereby declare that, this internship report has been done by us under the supervision of **Ms. Nawshin Farzana**, Assistant professor, Department of Textile Engineering, Faculty of Engineering, Daffodil International University. We also declare that, neither this report nor any part of this has been submitted elsewhere for award of any degree.

Submitted By:

Md. Mizanur Rahman

ID: 161-23-223

Submitted By:

Soumitra Roy Prince

ID: 161-23-225

Submitted By:

Imran Hossain Lotus

ID: 133-23-207

LETTER OF APPROVAL

This internship report prepared by **Md. Mizanur Rahman** (ID: 161-23-223), **Soumitra Roy Prince** (ID: 161-23-225), **Imran Hossain Lotus** (ID: 133-23-207) is approved in Partial Fulfilment of the Requirement for the Degree of **BACHELOR OF SCIENCE IN TEXTILE ENGINEERING**. The said students have completed their **INDUSTRIAL ATTACHMENT** under my supervision. During the Industrial Attachment period I found them sincere, hardworking and enthusiastic.

Ms. Nawshin Farzana

Assistant professor

Department of textile engineering

Faculty of engineering

Daffodil international university

Acknowledgement

First we express our heartiest thanks and gratefulness to almighty Allah for His divine blessing makes us possible to complete our Industrial attachment.

We are grateful to **Cotton Club (BD) Ltd.** for giving us this great opportunity to intern in such supportive friendly environment. They have given us great chance to work in details.

We fell grateful to and wish our profound our indebtedness to **Ms. Nawshin Farzana Assistant professor**, Department of Textile Engineering, Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of dyeing influenced us to carry out this Industrial attachment. His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior draft and correcting them at all stage have made it possible to complete this Industrial attachment.

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We are grateful to **Director General Manager, Md. Aminul Islam, of Cotton Club (BD) ltd.** for being so gracious to us. We would like to express our sincere appreciation to **Mr. Tanvir Ahmad, Senior Dyeing Manager, and Executive Officer (Dyeing), Md. Hadisur Rahman samrat** for their valuable advice, cooperation, guidance, encouragement and inspiration throughout the training period.

Finally, we must acknowledge with due respect the constant support and patients of our parents.

DEDICATION

“To our dignified **parents** and teachers may they live long”

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Executive Summary

The Internationally Recognized Byers of clients are looking for those countries for producing their apparel products where different types of industries have established as a one stop source for the global apparel market, satisfy and meet customer's expectations by developing and providing products and service on time, which offers in terms of quality, price, safety and environmental impact. And also assure complete compliance with the international quality standard and also provide the employees internationally acceptable working condition/ standards. In Bangladesh, there are various group of Textile industries those are producing high quality textile & apparel products. Cotton Club (BD.) Ltd. is 100% export oriented knit dyeing industries. It has finest quality & modern machineries with latest technology. The factory operates by high experienced qualified personal & skill work force who are truly professional & dedicated to their respective assignment. The working environment of the factory is very much congenial with heavily equipped power distribution supply.

To save our environment they have low liquor ratio machine which is very effective in term of water saving, energy consumption & chemical consumption. They have also introduced chiller run by Generator Exhaust, Waste Heat Recovery System & Economizer in the boiler which help to reduce the Carbon Emission.

CHAPTER-01

Company Profile

1.1- Company Profile:

Factory Name	:	Cotton Club Bd. Ltd
Nature of Business	:	100% export oriented knitted garments manufacturer
Location	:	South Jarun, Kashimpur Gazipur-1700, Bangladesh
Knitting Capacity	:	11,000 kg per day
Dyeing Capacity	:	12,000 kg per day
Printing Capacity	:	70,000 pcs per day
Sewing Capacity	:	60,000 pcs per day
Embroidery Capacity	:	35 million stitches per day
Floor Capacity	:	160,800 SFT
Achievements	:	OEKO-TEX, WRAP, GOTS, BSCI, ISO 9001-2008 certification
Establishment	:	2004
Contact Person	:	MD. ZUBAYER MONDOL (Director) E-Mail: zubayer.mondol@gmail.com Cell: +8801713030671

1.2- About Cotton Club Bd. Ltd.

Cotton Club (BD) Ltd is one of the most modern composite garments manufacturers in Bangladesh, Holding the floor capacity of 160,800 SQFT. It was incorporated in 2004 with a mission to grow up as a globally recognized garment manufacturing unit, by delivering quality product and achieving customers' satisfaction.

Cotton Club (BD) Ltd has commenced its commercial production from 2006. The manufacturing process of Cotton Club (BD) Ltd is vertically integrated with knitting, dyeing, cutting, printing, embroidery, sewing & finishing. The factory is located at Gazipur, one hour drive from Dhaka International Airport.

The company has invested a lot to set up the state of the art machineries to meet the challenges of Textile World. With the help of true leadership of the Management, it has a group of skilled, dedicated and hard- working employees.

Cotton Club has got three more production units. Cotton Clout (BD) Ltd. & Tropical Knit Tex Ltd. are producing knitted items for Ladies, men's and children's and another one is Cotton Clothing (BD) Ltd. producing Lingerie items.

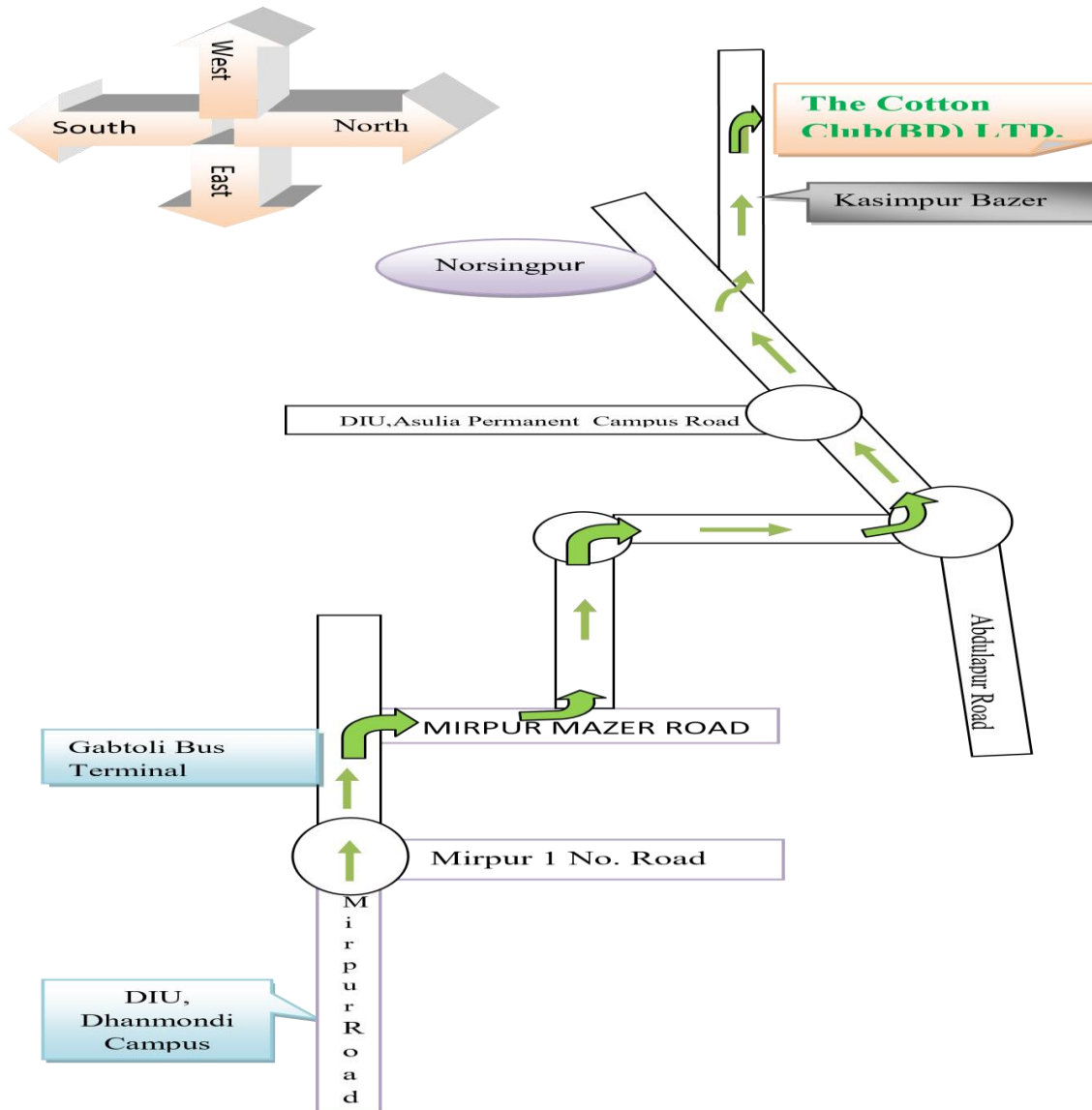
Cotton Club (BD) Ltd is an Oeko-Tex (Class#1), WRAP, GOTS certified, and 100% export oriented garments manufacturer. The Company are committed in providing the highest standard of quality, service and on time delivery.

1.3- Company Address:

South Jarun, Kashimpur

Gazipur-1700, Bangladesh

1.4- Company Location:



1.5 Main products:

Serial	Materials	Products
1	100% Cotton Knitted Fabrics	100% Cotton dyed Fabrics
2	PC Fabrics	PC dyed Fabrics
3	CVC fabrics	CVC dyed fabrics
4	Lycra cotton fabric	Lycra cotton dyed fabric
5	Cotton/Modal blend fabric	Cotton/Modal blend dyed fabric
6	Cotton/Viscose blend fabric	Cotton/Viscose blend dyed fabric
7	Lycra Viscose Fabrics	Lycra Viscose dyed Fabrics
8	Finish Fabrics	Readymade Garments

1.6 Buyers:

Serial	Buyers
1	Fila
2	C & A
3	KIABI
4	Bonprix
5	Mango
6	E.Family
7	ZARA
8	OFF Tex
9	Next
10	Fred Meyer
11	Nutmeg
12	Asmara
13	Takko
14	TAO

CHAPTER: 02

Man Power Management

2.1- Management system:

Cotton Club (BD) Ltd. has skilled administration, management, and marketing team. All the team is guided by highly skilled leader and they offer the right solution with proper time and minimum use of wealth.

The continuous development of the human resources gives the company International standard and makes the company one of the highest export oriented company in our country.

2.2- Total shift:

There are 3 shift per day in Cotton Club (BD.) Ltd.

Shift	Duration
General	8.00 am – 5.00 pm {Lunch (1.00 - 2.00) pm }
A	6.00 am - 2.00 pm
B	2.00 pm – 10.00 pm
C	10.00 pm – 6.00 am

2.3-Total Manpower of Dyeing & Finishing Sector:

	Dyeing Lab	Person
Executive		1
Junior Executive		1
In charge		1
Test Technician		5
Assistant Technician		3
Quality Control		1

	Dyeing Floor	Person
DGM (Dyeing & Finishing)		1
Senior Manager		1
Assistant Manager		1
Executive		3
Super visor		6
Operator		42
Assistant Operator		15
	Finishing (Dyeing)	Person
Senior Manager		1
Senior Executive		1
Senior Supervisor		1
Junior Supervisor		1
Supervisor		3
Operator		18
Assistant Operator		51
	Quality Control (Dyeing & Finishing)	Person
Senior In charge		1
In charge		1
Assistant In charge		1
Senior Supervisor		2
Supervisor		24

CHAPTER: 03

Dyeing Lab Department

3.1- Lab Dip Development:

Lab Dip Development means the sample which is dyed according to buyers requirements (similar shade and so on). Sample dyeing and bulk production dyeing depending on lab dip development.

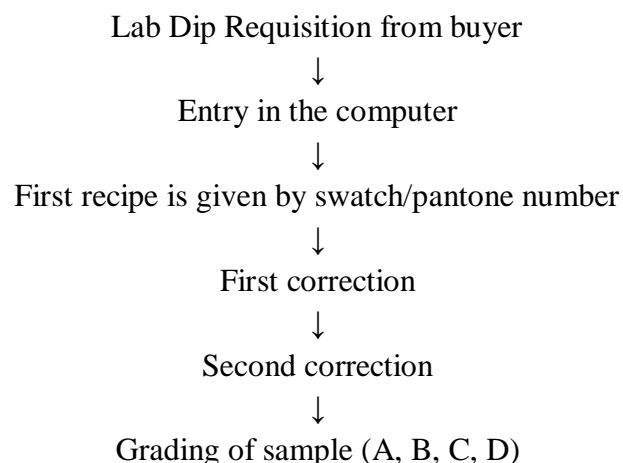
3.2- Object of Lab Dip:

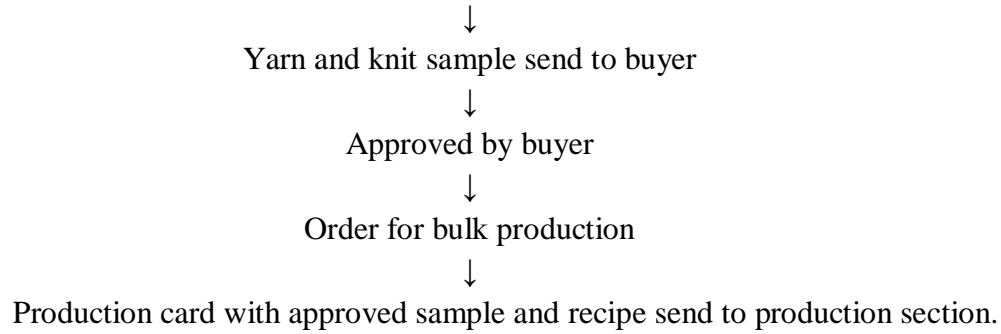
The main objectives in lab dip are as follows:

- ✓ To calculate the recipe for sample dyeing.
- ✓ To calculate revise recipe for sample dyeing.
- ✓ To compare dyed sample with swatch by light Box or Spectrophotometer.
- ✓ Finally approved Lab Dip (Grade: A, B, C & D)

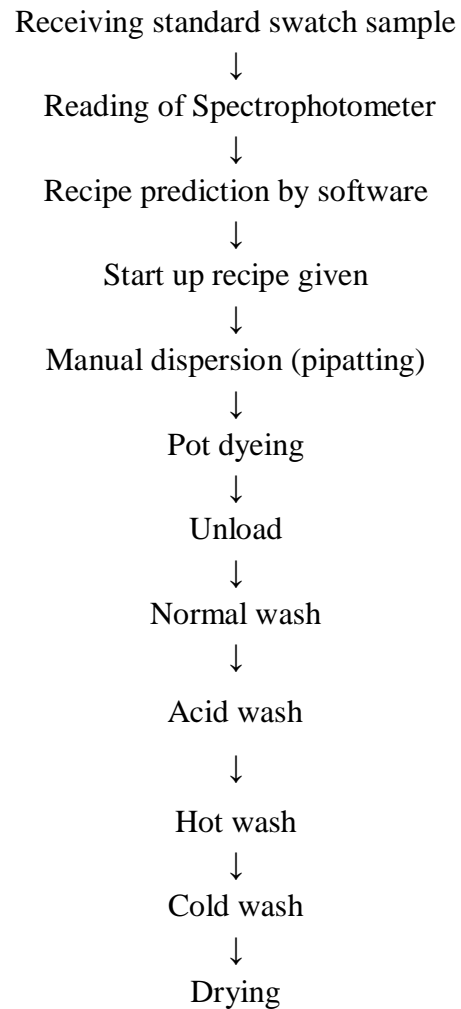
3.3- Process Sequence of Lab work :

Lab work plays an important role in bulk dyeing process. Bulk dyeing process completely depends on the lab dip development work.





3.4- Development of Lab Dip:



3.5- How to Make Stock Solution:

0.001% → It means in 90 cc water mixed 10 cc chemicals.

0.01% → It means in 99 cc water mixed 1 cc chemicals

0.1% dye shade → It means mix 0.1 gm dye in 100 cc water

0.5% dye shade → It means Mix 0.5 gm dye in 100 cc water.

1% → Mix 1 gm dye in 100 cc water.

2% → Mix 2 gm dye in 100 cc water.

3.6- Calculation Stock Solution in Lab Dip:

$$\text{Dyeing (Solid)} = (\text{Sample Weight} \times \text{Shade\%}) / \text{Stock\%}$$

$$\begin{aligned} \text{Chemical} &= (\text{Chemical Weight} \times \text{Total liquor}) / \text{Stock\%} \\ &= (\text{Chemical wt} \times \text{Total liquor} \times 100) / (1000 \times \text{Stock\%}) \end{aligned}$$

3.7- Calculation Used in dyeing Lab:

$$\text{Chemical} = (\text{Sample wt} \times \text{ML:R} \times \text{Shade\%} \times 100) / (1000 \times \text{Stock\%})$$

3.8 - Laboratory machines:

Serial No.	Machines
01	Crock meter
02	Wash fastness tester
03	Perspiration fastness tester
04	Spectrophotometer
05	Tumble dryer
06	Sample dyeing machine

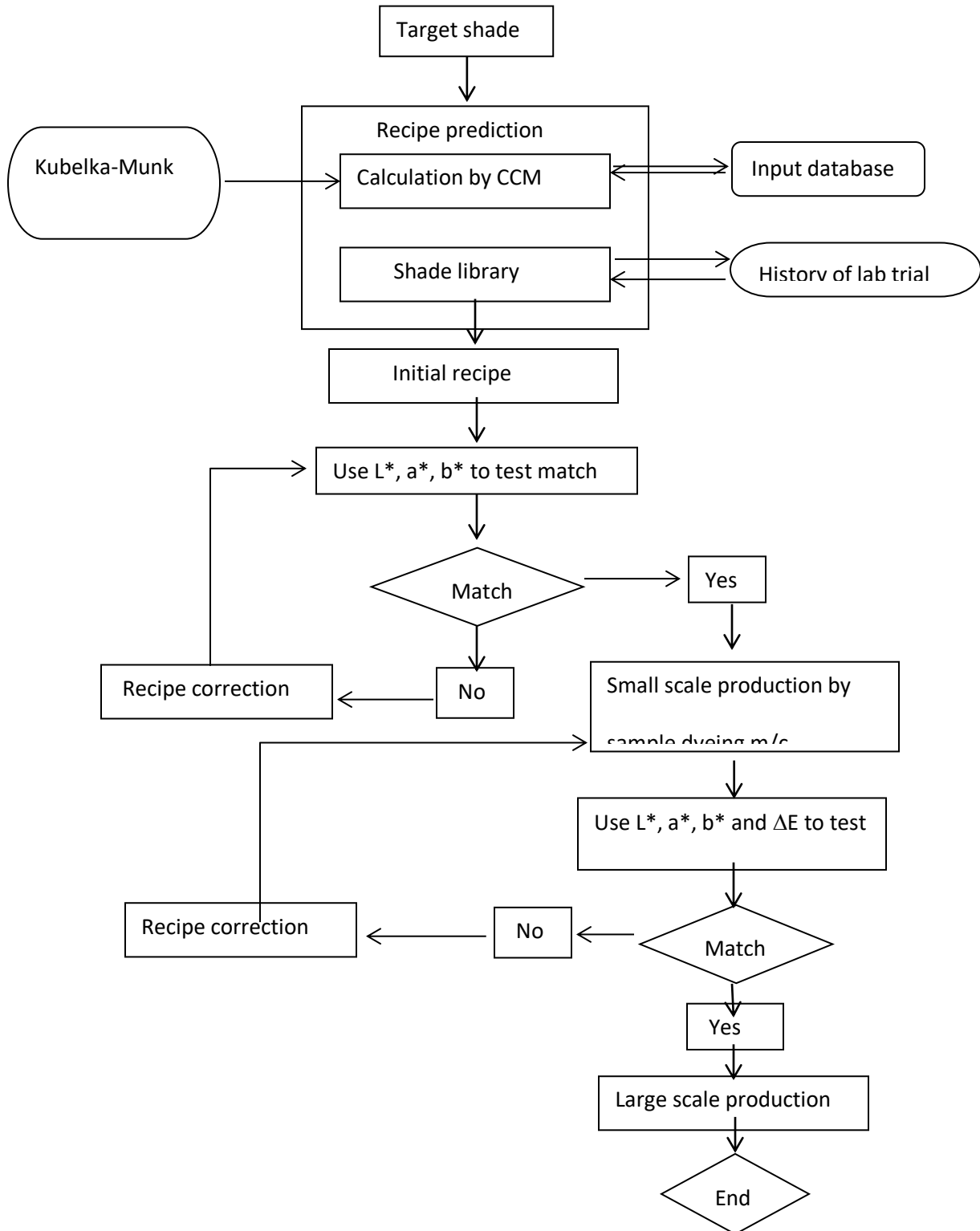
3.9- Computer Color Matching System (CCMS):

Computer color matching system (CCMS) is the latest system to predict and analyzed the color of the sample. In wet processing section it is mostly used. In 1963 it is first introduced by ICI Company but it is introduced international color system in 1973. Now different companies produce CCMS but among them DATA COLOR is the best.

3.10- Different Components of CCMS

- A. Computer
- B. Spectrophotometer
- C. Printer

3.11- Spectrophotometer flow Chart:



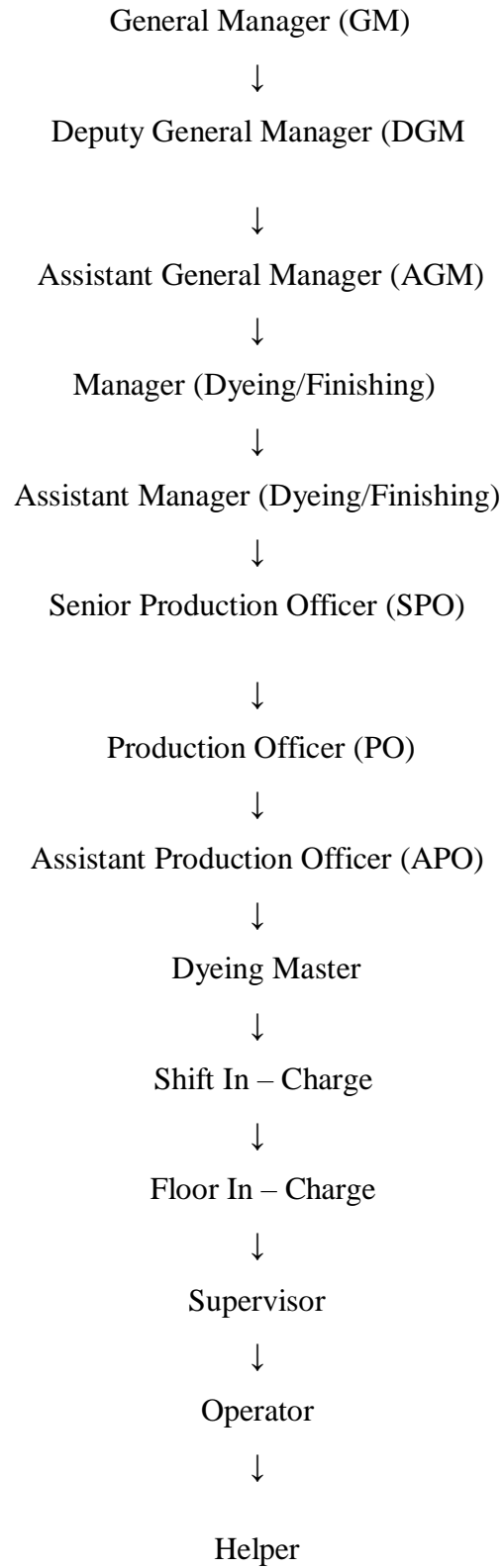
CHAPTER: 04

DYEING SECTION

4.1- Dyeing & Finishing Section Layout



4.2- Organogram of dyeing section:



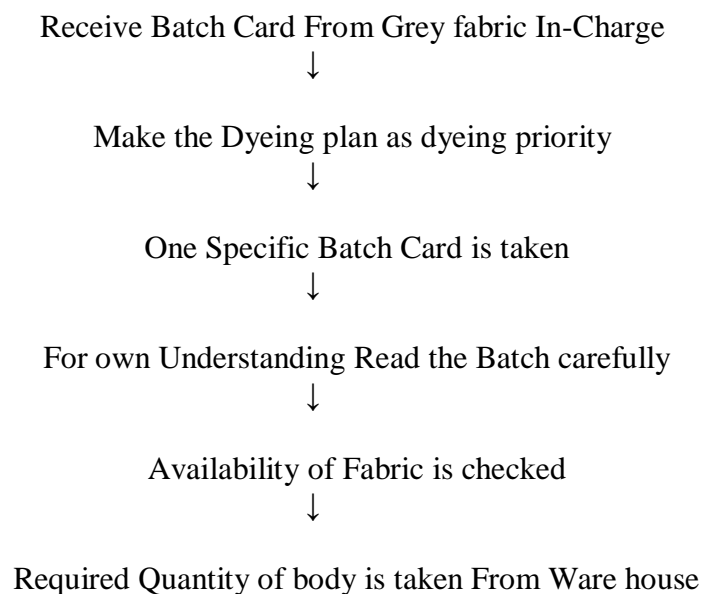
4.3-Responsibilities of production manager:

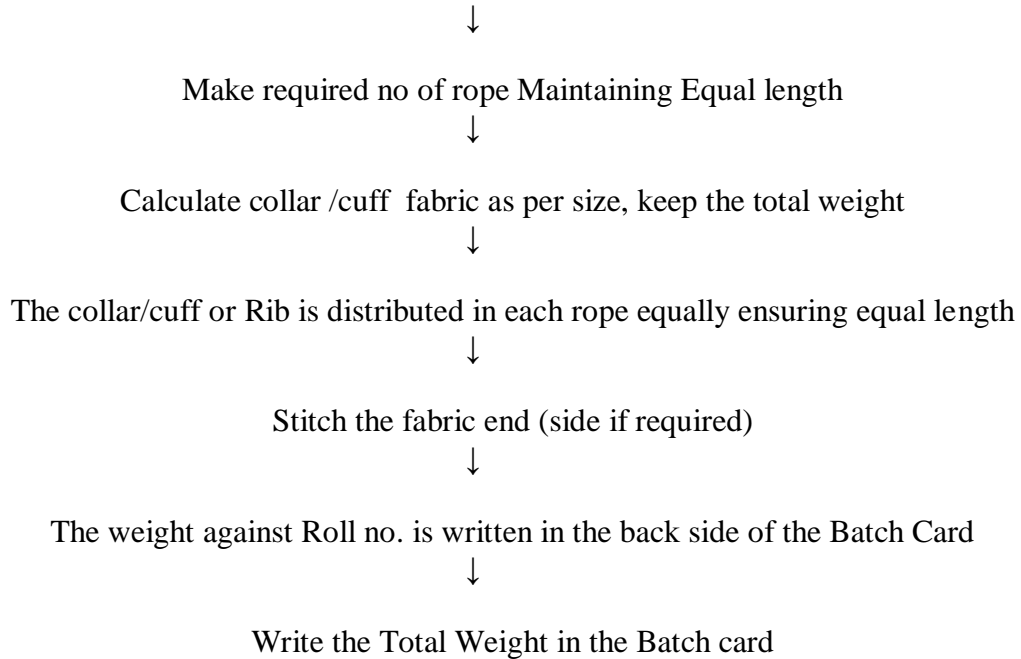
- To identify any kind of dyeing problems during dyeing.
- To observe whole dyeing procedure.
- To supervise senior and junior production officer.
- To provide production schedule and capacity.

4.4-Responsibilities of production officer

- To provide dyeing recipe.
- To check and maintain PH during dyeing.
- To supervise assistant, operator, helpers.
- To check water level & every dyeing batch.
- To check daily production & report to the production manager.

4.5- Process Sequence of Batch Preparation





4.6- Objectives of Batching:

- To receive the grey fabric roll from knitting section or other source.
- Turn the grey fabric if require.
- To separate different types of fabrics
- To put the same characteristics fabric jointly.
- To ensure proper dyeing with actual shade.

4.7- To prepare the batch of fabric for dyeing according to the following criteria

- Received order sheet from buyer
- Dyeing shade prediction (color or white, light or dark)
- M/C capacity
- M/C available
- Type of fabrics(100% cotton, PE, PC, CVC)
- Emergency
- To send the grey fabric to the dyeing floor with batch card.
- To keep records for every previous dyeing.
- To use maximum capacity of existing dyeing m/c.
- To minimize the washing time or preparation time & m/c stoppage time.
- To keep the no. of batch as less as possible for same shade.
- To use a particular m/c for dyeing same shade.

4.8- Batch Management:

Primarily batching (same characteristics material) is done by dyeing manager taking the above criteria under consideration. Batch section in-charge receives this primary batch plan from dyeing manager. Sometime planning is adjusted according to m/c condition or emergency delivery.

4.9- Fabric Turning M/C:

Model	DNAT- 400
Roller Width	400 mm
Machine Space (over all)	Length =5.6m Width =1.1m Height = 1.41m
Set-up	Length =7.6m Width =2.1m Height =1.51m
Production Capacity	7~10 Ton/Day
Spare parts (Tool Box)	1 set
Electric Capacity	11.75 kw
Fan Motor	11 kw
Roller Motor	0.75 kw

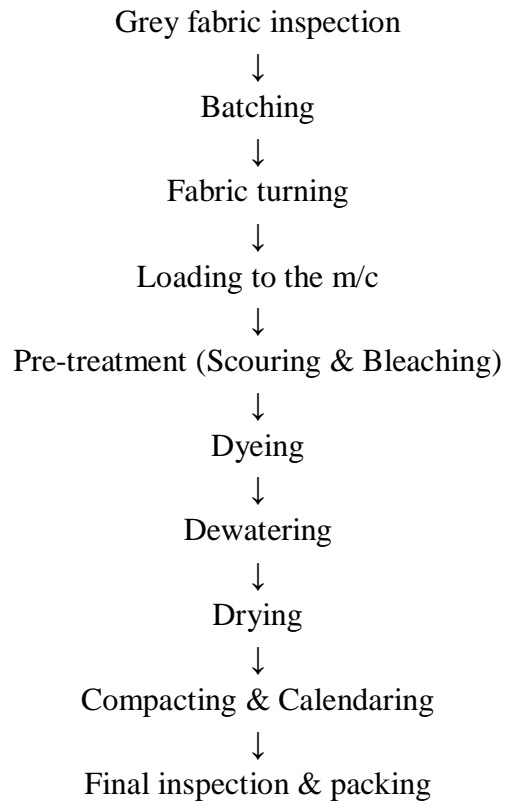
Function:

- ✓ The Machine is used to reverse the knitted face to back and back to face.

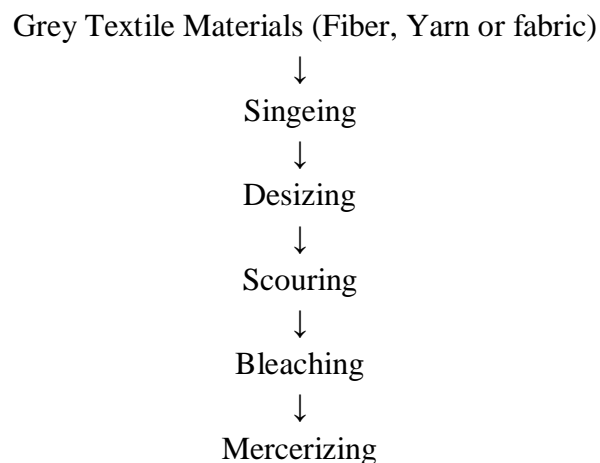


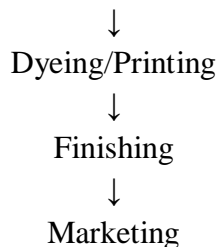
Figure: Fabric Turning m/c

4.10- Sequence of Operation for Knit Fabric Dyeing Section:



4.11- Process flow chart of Dyeing:





Dyeing Machines:

The dyeing section of Cotton Club (BD) Ltd. Has 17 Dyeing machine. Among them 04 are sample dyeing machine and 13 are for bulk production. Machine specification of the machines is given bellow.

4.12- Sample Dyeing Machine:

Parameter	Machine no:01 (A+B+C)	Machine no:02
Manufacturer	FONG'S , China	FONG'S , China
M/c Capacity	10 kg	10 kg
Maximum Working Temp.	135 °c	135 °c
Liquid Ratio	1:5-1:8	1:5-1:8
Design Working Pressure	3.5 Bar	3.5 Bar
Hydraulic Test Pressure	5.4 Bar	5.4 Bar
Safety Valve Set	3.5 Bar	3.5 Bar
Maximum Surface Temp.	140 °c	140 °c
External Tank Capacity	40 lt. Dyes + 40 lt. Chemicals	20 lt. Dyes + 20 lt. Chemicals
Water Capacity	80 lt.	560 lt.

4.13- Dyeing Machine for Bulk production:

Dyeing qualities depends upon different factors, dyeing m/c quality is one of them. If the dyeing m/c are not perfect, there are many dyeing defect occurred in dyeing. For bulk dyeing DMS 11 HT JUMBO m/c are used for fabric dyeing in cotton club. HT Jumbo is designed and manufactured with the latest high technology for dyeing different types of fabric like cotton, polyester, viscose, nylon different types of blend etc.

Parameter	Machine no:01	Machine no:02	Machine no:03
Manufacturer	Dilmenler ,Turkey	Dilmenler ,Turkey	Dilmenler ,Turkey
M/c Type	DMS 11 HT JUMBO	DMS 11 HT JUMBO	DMS 11 HT JUMBO
M/c Capacity	25 kg	50 kg	150 kg
Maximum Working Temp.	135 °c	135 °c	135 °c
Liquid Ratio	1:5 – 1:8	1:5 – 1:8	1:5 – 1:8
Maximum Working Pressure	2,5 Bar	2,5 Bar	2,5 Bar
Maximum Surface Temp.	140 °c	140 °c	140 °c
External Tank Capacity	100 Lt.(chemical) + 100 Lt. (Dyes)	150 Lt.(chemical) + 150 Lt. (Dyes)	150 Lt.(chemical) + 150 Lt. (Dyes)
Water Capacity	400 Lt.	500 Lt.	1350 Lt.

Parameter	Machine no:04	Machine no:05	Machine no:06
Manufacturer	Dilmenler ,Turkey	Dilmenler ,Turkey	Dilmenler ,Turkey
M/c Type	DMS 11 HT JUMBO	DMS 11 HT JUMBO	DMS 11 HT JUMBO
M/c Capacity	600 kg	900 kg	1200 kg
Maximum Working Temp.	135 °c	135 °c	135 °c
Liquid Ratio	1:5 – 1:8	1:5 – 1:8	1:5 – 1:8
Maximum Working Pressure	2,5 Bar	2,5 Bar	2,5 Bar
Maximum Surface Temp.	140 °c	140 °c	140 °c
External Tank Capacity	600 Lt.(chemical) + 600 Lt. (Dyes)	700 Lt.(chemical) + 700 Lt. (Dyes)	700 Lt.(chemical) + 700 Lt. (Dyes)
Water Capacity	4800 Lt.	7000 Lt.	9100 Lt.

Parameter	Machine no:07	Machine no:08	Machine no:09(A)
Manufacturer	Dilmenler ,Turkey	Dilmenler ,Turkey	Dilmenler ,Turkey
M/c Type	DMS 11 HT JUMBO	DMS 11 HT JUMBO	DMS 11 HT JUMBO
M/c Capacity	300 kg	600 kg	450 kg
Maximum Working Temp.	135 °c	135 °c	135 °c

Liquid Ratio	1:5 – 1:8	1:5 – 1:8	1:5 – 1:8
Maximum Working Pressure	2,5 Bar	2,5 Bar	2,5 Bar
Maximum Surface Temp.	140 °c	140 °c	140 °c
External Tank Capacity	225 Lt.(chemical) + 225 Lt. (Dyes)	600 Lt.(chemical) + 600 Lt. (Dyes)	400 Lt.(chemical) + 400 Lt. (Dyes)
Water Capacity	1600 Lt.	4800 Lt.	3200 Lt.

Parameter	Machine no:09(B)	Machine no:10(A)	Machine no:10(B)
Manufacturer	Dilmenler ,Turkey	Dilmenler ,Turkey	Dilmenler ,Turkey
M/c Type	DMS 11 HT JUMBO	DMS 11 HT JUMBO	DMS 11 HT JUMBO
M/c Capacity	450 kg	300 kg	300 kg
Maximum Working Temp.	135 °c	135 °c	135 °c
Liquid Ratio	1:5 – 1:8	1:5 – 1:8	1:5 – 1:8
Maximum Working Pressure	2,5 Bar	2,5 Bar	2,5 Bar
Maximum Surface Temp.	140 °c	140 °c	140 °c
External Tank Capacity	400 Lt.(chemical) + 400 Lt. (Dyes)	300 Lt.(chemical) + 300 Lt. (Dyes)	300 Lt.(chemical) + 300 Lt. (Dyes)
Water Capacity	3200 Lt.	2400 Lt.	2400 Lt.

Parameter	Machine No : 11
Manufacturer	Dilmenler ,Turkey
M/c Type	DMS 11 HT JUMBO
M/c Capacity	1000 kg
Maximum Working Temp.	135 °c
Liquid Ratio	1:5 – 1:8
Maximum Working Pressure	2,5 Bar
Maximum Surface Temp.	140 °c
External Tank Capacity	600 Lt.(chemical) + 600 Lt. (Dyes)
Water Capacity	5400 Lt.



Figure: Winch Dyeing M/C

4.14- Raw Materials of Dyeing:

Fabrics:

1. Single jersey grey fabric
2. Rib fabric
3. Interlock fabric

Cotton Club (BD) Ltd. Only dyes this three types of fabric.

4.15- Commonly Used Dyes in Cotton Club (BD.) Ltd:

Brand Name	Commercial Name
Coralene	Coralene Red XF
	” Yellow Brown XF
	” Rubine XF -2G
	” Black XF 110%
	” Blue XF 110%
	” Brill Red XF BN
	” Brill Blue BG
	” Lume Pink 5B
	” Lume Pink RBSF
	” Lume Yellow 10GN
	” Lume Red G

Corafix	Corafix G. Yellow MERP 150%
	” Red ME-4BP 150%
	” Brilliant Sky Blue-G
	” Black GDNN
	” Sapphire HP-RB
	” Blue –HPRL
	” Blue CL-HB
	” Orange CL-3R p
	” Red K-8B p
	” Scarler HF-3G edg
	” Yellow X-8GN
	” Turquoise CLB
Finozol	Finozol Red K2BF
	” Red KBS 150%
	” Blue RSPL 150%
	” Blue KBF 150%
Fucozol	Fucozol Yellow UCF
	” Red UCX
	” Black BG
Polazol	Polazol Yellow MS
	” Red MS
	” Navy Blue MS
Setapers	Setapers Rubine CTW
	” Navy Blue CTW
	” Black ECP

Brand Name	Commercial Name
Remazol	Remazol Yellow RR
	” Red RR
	” Blue RR
	” Orange RR
	” Br. Yellow 3GL
	” Br. Blue BB New
	” Turquoise GN 266%
	” Blue RSPL 160%
	” T.Blue G 133%
Sunfix	Sunfix Yellow SPD cone
	” Red SPD cone
	” N. Blue SPD cone
	” Yellow SPR
	” Blue SPR
	” Red SPR
Sunwhite	Sunwhite BNH(poly.Brit)
	” 4 BK
	” BVB (nylon Brit)
Procion	Procion Dark Blue V-EL
	” Yellow V-EL
	” Crimson HE-XL
	” Sapphire HE-XL
	” Navy HE-XL
	” Lamon H-Exl

4.16- Commonly Used Auxiliaries & Chemicals in Cotton Club (BD.) Ltd:

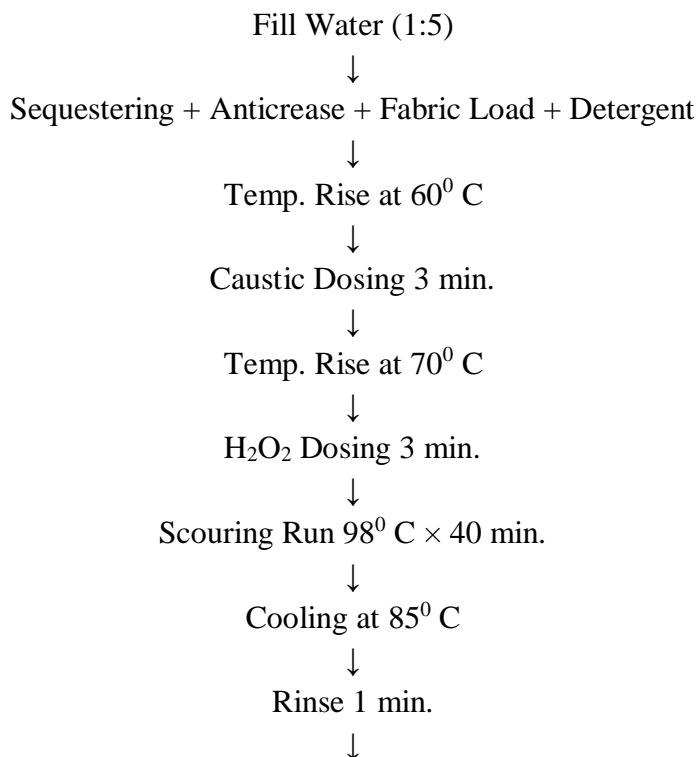
Name	Item
Detergent	Rheopol BMW
Sequestering	Suntex XPA
	Neoseq CI
	Lufibrol 2UD
Anti-Crease	Shunsoft LUB
	Imaco I Pc
	Lube 1010 Max
	Neolube C
Strong Alkali	Caustic Soda
Mild Alkali	Soda Ash
	Soda Cone
Bleaching Agent	H ₂ O ₂
	Bleaching Powder
	Hydrose (BASF)
Stabilizer	Shuntex UFB
Stain Remover	Finocon X 55
Anti Staining	Crosden LPD
Anti Yellowing	Umidol APY
Anti Foam	Defoamer SS
Per Oxide Killer	Mega OX-1
	Croaks NF

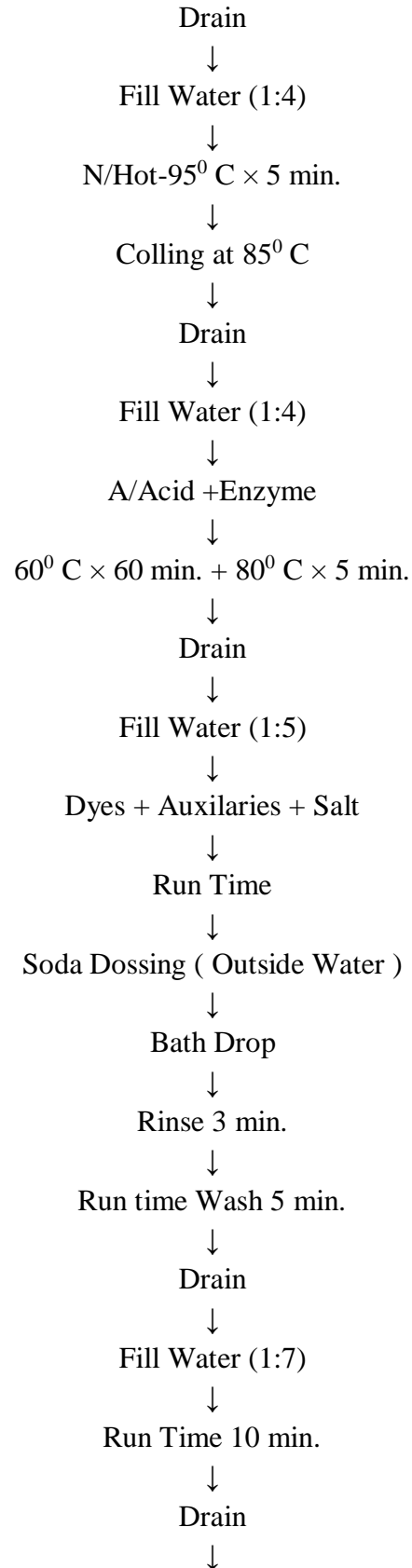
Organic Acid	Formic Acid
	Nutrafil 100V
	Sirrix NE
Enzyme	Mega Br-9-Plus
	Mega PK
Leveling	Rheotoch BDR
	Rheotec MFA
	Shuntex XMA
	CTF 1101
Salt	Glober Salt
Soaping	Shunsol RSL
	Ma Soap NC
Fixing	Peramix RD
	Denimcol Fix OS
	Optifix EC
	Optifix RSL
	Super Soap Softener
Softener	Softener WS-054
	Poly Softer AQ-09
	Permasoft-2120
	Wacker Power Soft-180

4.17- Production parameter:

Process names	pH	Temperature	Time
Scouring & bleaching	10	100 ⁰ C	1 hrs
Levelling	4-4.5
Enzyme wash	4.5-5	55 ⁰ C	30 min.
Reactive Dyeing (M:L=1:8)	10-12	60 ⁰ C	1 hrs
Polyester Dyeing (M:L=1:10)	5-6	135 ⁰ C	45 min.

4.18- One part Dyeing Cotton fabric (Reactive)





Fill Water (1:4)
↓
A/Acid
↓
Hot Wash 95⁰ C
↓
Cooling at 85⁰ C
↓
Drain
↓
Fill Water (1:7)
↓
Run Time 10 min.
↓
Drain
↓
Fill Water (1:7)
↓
Run time 10 min.
↓
Drain
↓
Fill Water (1:7)
↓
Run time 10 min.
↓
Drain
↓
Fill Water (1:4)
↓
Fixing + Softener

N:B : After Bath Drop

2 Time Wash for Light to Medium shade

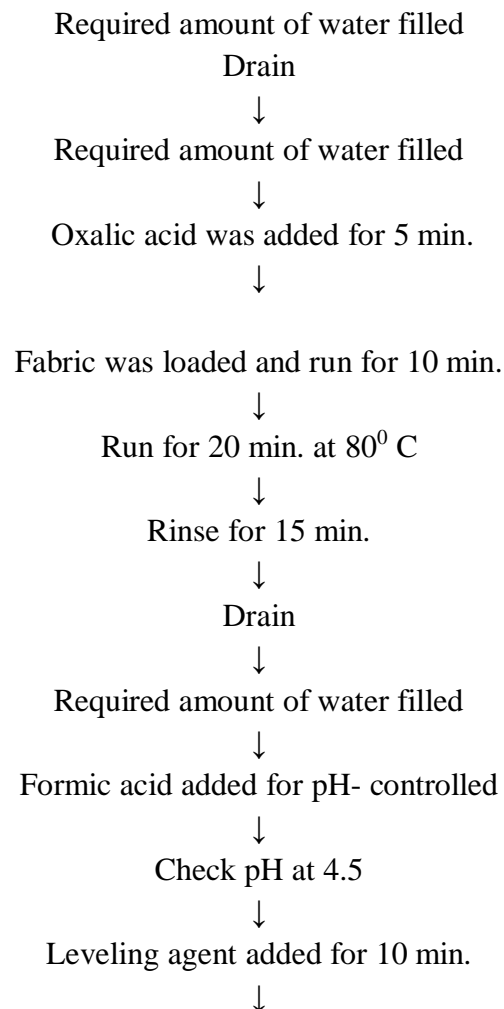
3 Time Wash for Black , Navy , Royal , Turquoise , Deep Red

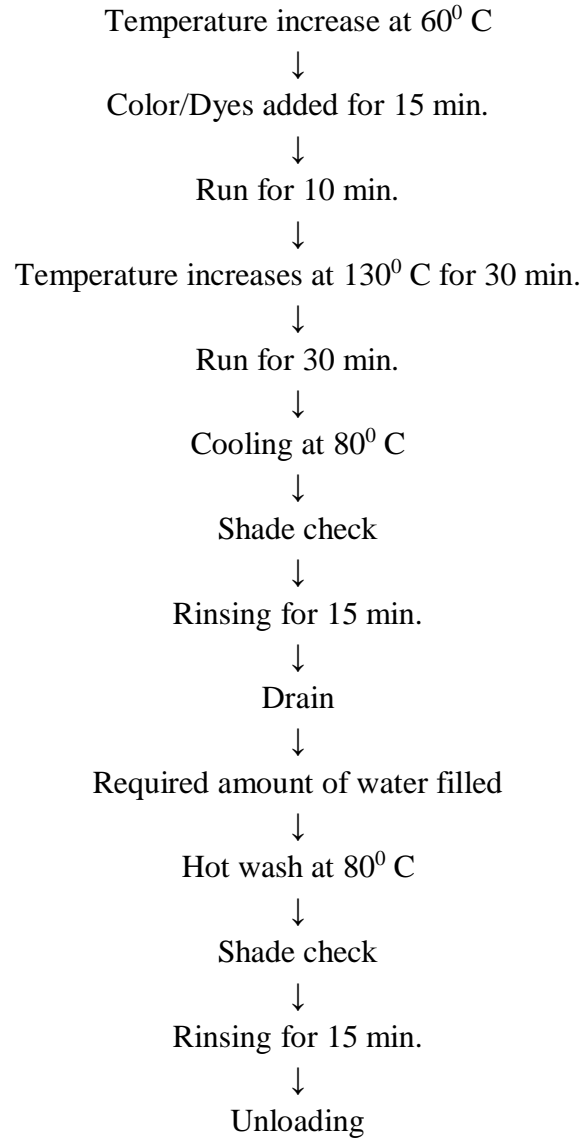
4.19- Two Part Dyeing Polyester fabric + Cotton fabric (Disperse dye & Reactive dye)

Process of Polyester/Cotton (P/C) Fabric dyeing:

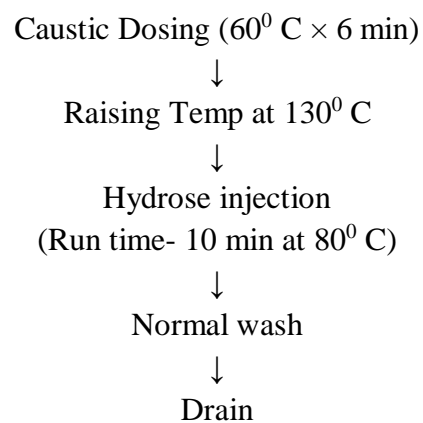
1. At first the Polyester Part dyeing same as Polyester Dyeing.
2. Then the Cotton Part dyeing same as Cotton Dyeing.

Dyeing Procedure of polyester fabrics with Curve:





Reduction Cleaning-



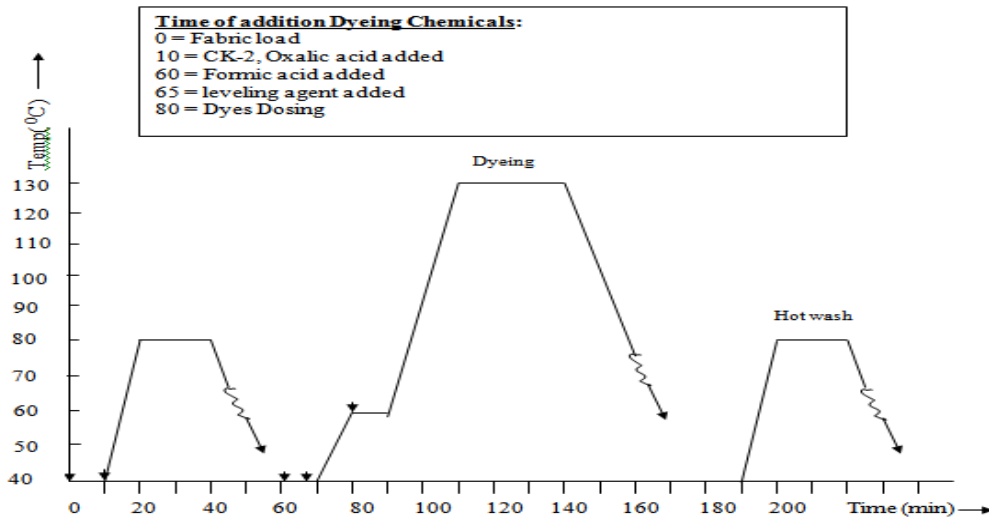
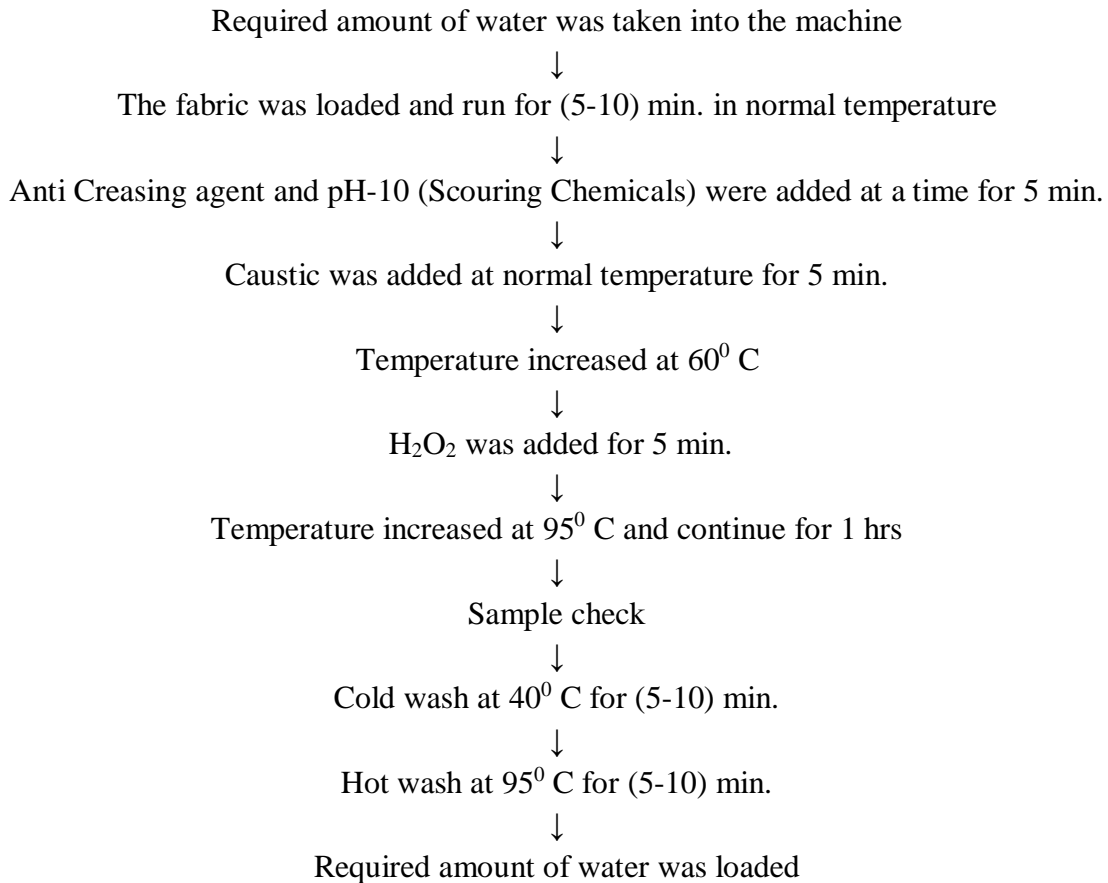
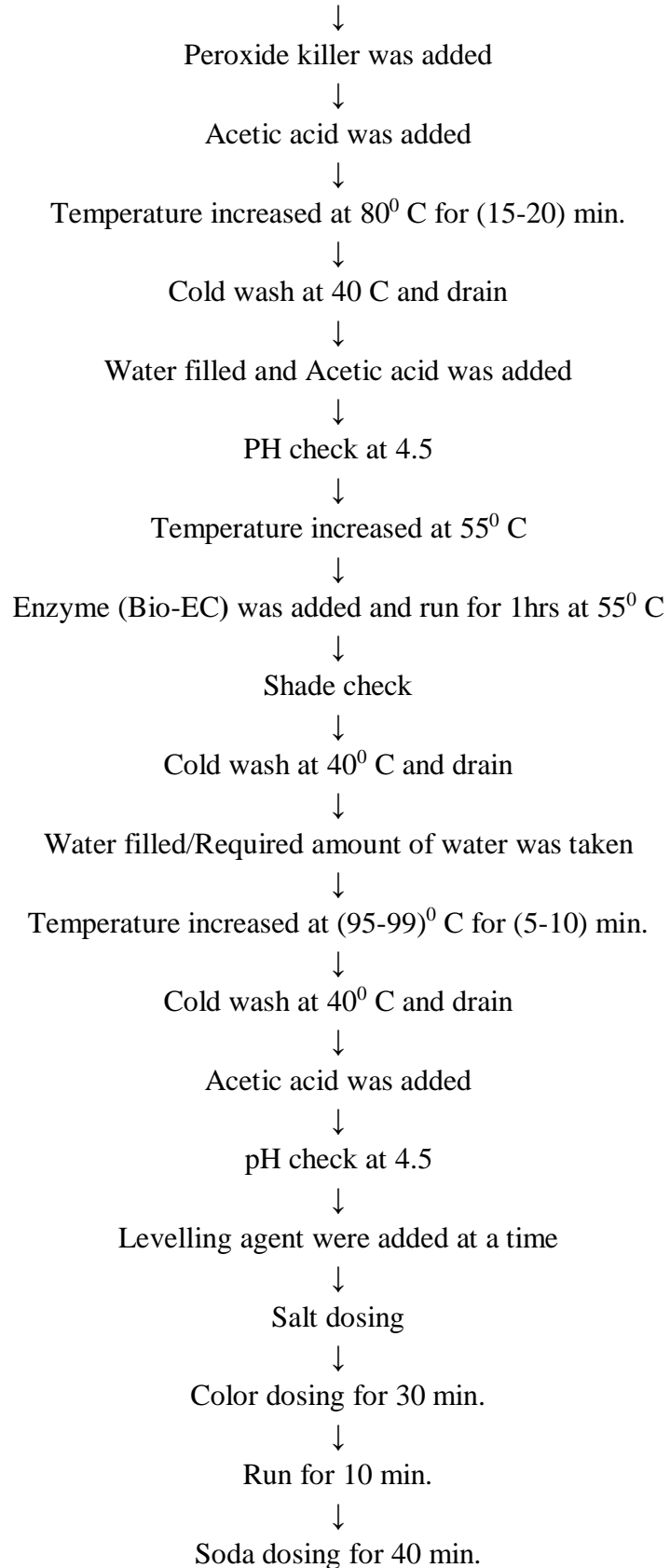
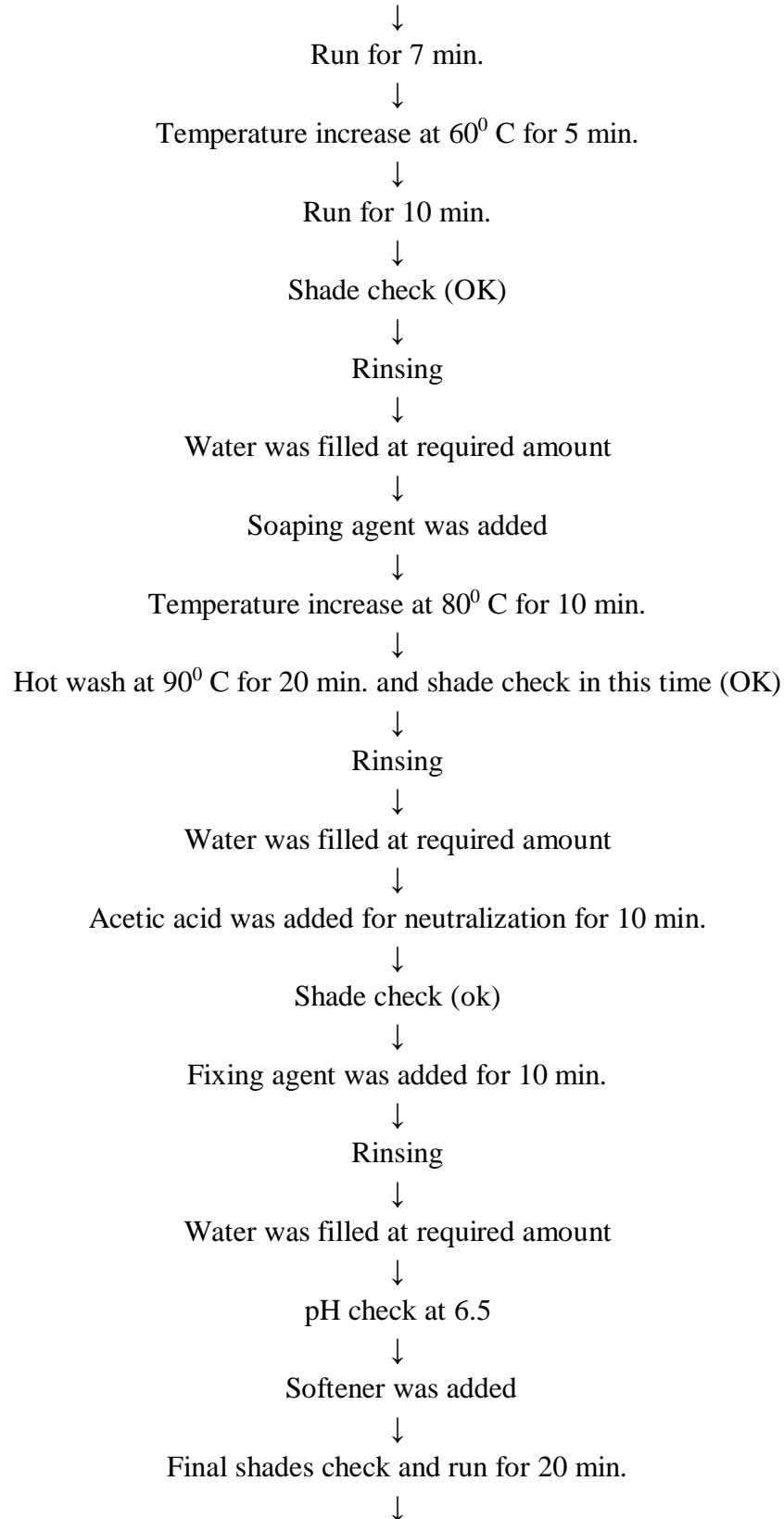


Figure-1: Dyeing Curve of Polyester.

Cotton Dyeing Steps with Curve:







Unload the dyed fabric

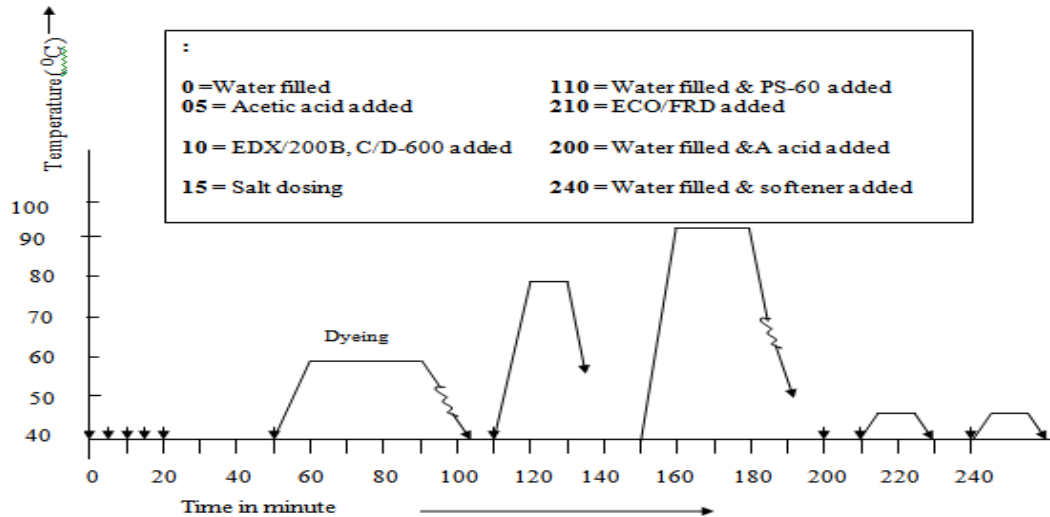


Figure-4: Dyeing Curve of Cotton.

4.20- Common faults in dyeing and their Causes:

❖ Uneven dyeing in a rope

Cause :

Uneven dyeing in a rope occurs due to uneven pretreatments and rapid addition of dyes and chemicals.

❖ Rope to rope uneven shade

Cause :

Rope to rope shade variation occurs due to having incorrect rope length and fabric flow speed in different nozzles of dyeing machine.

❖ **Batch to batch shade variation**

Cause :

If any dyeing parameter (time, temperature, liquor ratio etc.) are changed, then problems arise in batch to batch shade reproducibility.

❖ **Dye spots**

Cause :

This problem occurs when the operators do not dissolve correctly the dyestuff, in the right amount of water.

❖ **Patta effect or Barrie effect**

Cause :

This type of fault is found after dyeing due to yarn lot or count mixing in fabric.

❖ **Crease marks**

Cause :

This problem occurs due to machine is overloaded by fabric and due to absence of sufficient amount of liquor in the machine during process.

❖ **Band marks**

Cause :

Band marks are found in folded areas of wet dyed fabric due to dye migration.

❖ **Pin holes**

Cause :

Pin holes are very small holes that can be 44ccurs if iron content in fibres is very higher.

❖ **Ending or tailing effect**

Cause :

Shade variation occurs lengthwise of dyed fabric due to changing the concentration of dye liquor.

❖ **Listing effect**

Cause :

This problem occurs width way of dyed fabric due to uneven pressure of padder rollers.

❖ **Patchy dyeing**

Cause :

In continuous dyeing it occurs due to improper fabric impregnation in pad trough and uneven heating inside the machine.

❖ **Specky dyeing**

Cause :

It occurs in continuous dyeing due to excessive foam generation in pad trough and insufficient pretreatment.

CHAPTER: 05

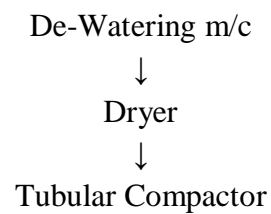
Dye Finishing

5.1- Objects of Finishing:

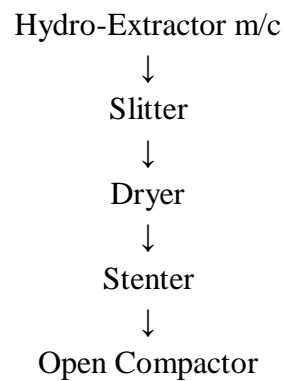
1. To improve the attractiveness of the fabric.
2. To increase the life time or durability of the fabric.
3. To meet up specific requirement of the fabric for achieve the final goal.

5.2- Process Sequence of Finishing Machine:

Tubular Fabric:



Open Fabric:



Technical Parameter of Finishing Machineries

5.3- De-Watering m/c:

Technical Parameter:

Manufacture	Corino,Italy
Fabric Passing Speed	Depends on Count & GSM For low GSM fabric : 60-65 m/min. For medium GSM fabric : 55-58 m/min. For high GSM fabric : 50-52 m/min.
Overfeed Regions	J-box, Before Padder 1 & Padder 2
Pressure in Padder	Padder 1 : (4-5) bar Padder 2 : (3.5-4) bar
Types of Softener Used	Cationic Softener pH : (4.5-5) Concentration of Softener : 10g/l Bath is Changed after every 100 kg fabric.
Dia of Shaper	Max. : 52 inches Mini. : 18 inches
Water Recovery	(140-150) %
Power Consumed	400 v , 50 Hz

Function:

- To remove the excess water inherited by the fabric during Dyeing.
- To Clean any Unnecessary dirt or hairs of fibers.
- To soften the fabric if required by using softening agent.



Figure : De-Watering m/c

5.4- Dryer:

Technical Parameters :

Manufacture	DILMENLER,Turkey
Temperature	For Colored fabric : Chamber 1 :140 ⁰ C Chamber 2 :150 ⁰ C Chamber 3 :130 ⁰ C For White fabric : All Chamber : 120 ⁰ C
Working Width	3000 mm
Speed	(8-80) m/min.
Nozzle distance	(35-55) mm
Power Consumption	140 w

Function:

- To dry the wet fabric.
- Control the shade & GSM slightly.



Figure : Dryer

5.5- Tubular Compactor:

Technical Parameters:

Manufacture	TUBETEX,USA
Speed of passing fabric	(22-40) m/min.
Shaper length	According to required Dia
Overfeed ratio	Edge drive zone : (1.0 -1.5) Retard roller : (0.80 – 0.85) Take-out zone : (0.85 - .90) Conveyer belt : (1.0 -1.05) Plaiter : (0.80 – 0.85)
Compaction%	According to Shirnkage result S/J : (10-15)% Rib : (10-12)% Interlock : (8-10)% Pique : (7-8)%
Shoe Pressure	S/J –large dia : avg. 30 psi S/J –smaller dia: (10-15)psi Rib : (10-20) psi Lycra : < 10 psi
Power Consumed	80 Kw
Thermo-Oil Temp.	90 ⁰ C

Function :

- To control Dimensional stability of fabric.
- To control GSM of fabric.
- To make shiny effect on fabric surface



Figure : Tubular Compactor

5.6- Slitter m/c:

There are two slitting m/c in Cotton Club (BD.) Ltd.

Technical Parameter :

Manufacture	BIANCO,ITALY DILMENLER,TURKEY
Speed	Varies with type of fabric
Overfeed	In feed zone,Cutting zone, Conveyor belt (20-30)%
Pressure	In De-twister zone:0.5 bar In Padding: (4-5) bar

Function:

- To Slit-cut the tubular fabric through the needle mark.
- To remove excess water.
- To prepare the fabric for next operation.



Figure : Slitter m/c

5.7- Open Width Compactor:

Technical Parameters:

Manufacture	LAFER, ITALY
Max. line speed	60 m/min.
Usable line speed	30 m/min.
Max. Dia	95 inch
Workable Dia	90 inch
Steam box Temp.	80 ⁰ C
Feed R/L Temp.	105 ⁰ C
Over feed	Upto 50%
Shoe pressure	Max. : 18 Mini. : 5

Function:

- To compact the fabric.
- To control the shrinkage.
- To maintain proper width & GSM.

Condition:

- **Deep shade & Yellowish:** Temperature , Pressure should low but Stream should high.
- **Light shade:** Temperature , Stream should high but Pressure low.
- **GSM:** High Stream is increase GSM.



Figure : Open Width Compactor

CHAPTER: 06

Quality Assurance System

6.1- Objective of quality control:

- ✦ Research.
- ✦ Selection of raw materials.
- ✦ Process control.
- ✦ Process development.
- ✦ Product testing.
- ✦ Specification test

6.2- Quality management system:

Off line test	On line test
<ul style="list-style-type: none"> ✦ Physical test ✦ Chemical test 	<ul style="list-style-type: none"> ✦ Rubbing fastness ✦ Water fastness ✦ Wash fastness ✦ Shade check
Physical test	Chemical test
<ul style="list-style-type: none"> ✦ Abrasion test ✦ Rubbing test ✦ Dimension stability check 	<ul style="list-style-type: none"> ✦ Colour fastness to light ✦ Colour fastness to washing ✦ Colour fastness to Perspiration ✦ Colour fastness to heat

6.3- Quality standard:

Basically Cotton Club (BD.) Ltd follows ISO standard but the quality standard basically depend on the buyer choice.

CHAPTER: 07

Store and Inventory Control

7.1- Inventory control:

There are TWO types of Inventory Control System in Cotton Club (BD.) Ltd

- ✦ Monthly inventory control
- ✦ Annual inventory control

7.2- Types of inventory carried in this mill is as follows:

- ✦ Grey fabric: Prepared in this factory
- ✦ Grey yarn: Imported.
- ✦ Dyes and chemicals: Imported
- ✦ Machines parts: Imported
- ✦ Packing materials: Imported

7.3- Inventory system of Raw materials:

- ✦ Basically Dyes and chemicals are stored to separate store.
- ✦ Grey fabric is stored to the grey store after prepare the fabric from knitting. And grey yarns are stored to the another storage.



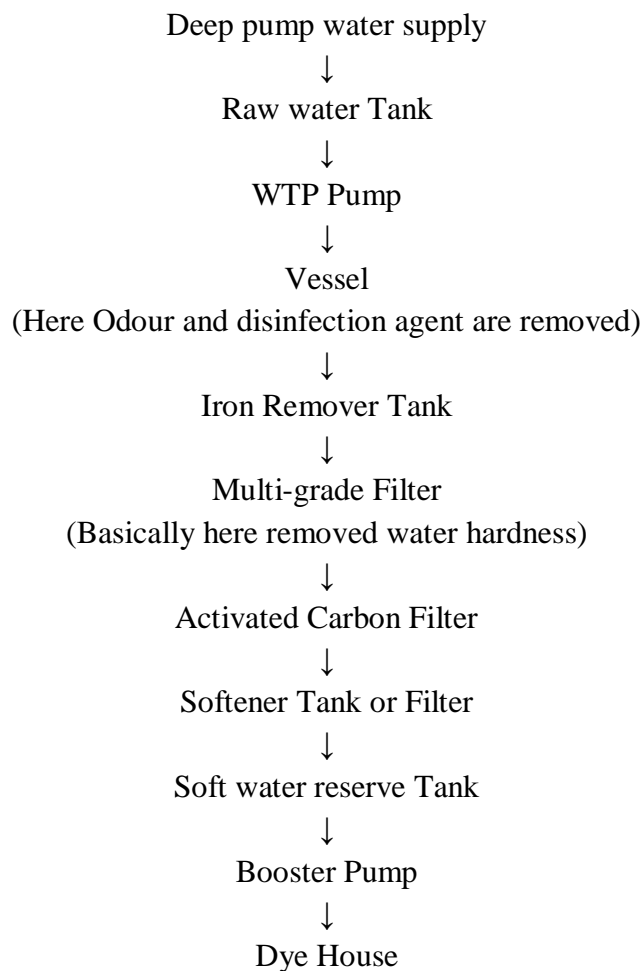
CHAPTER: 08

WTP (Water treatment plant)

8.1- Water treatment plant (WTP):

Water treatment plant is the plant where ground water is collected by textile industries and remove the water impurities for textile dyeing process. Water treatment plant is very important because without proper water treatment (that means removing all impurities from water) textile dyeing will not occurs properly. For this WTP is very essential for every textile wet processing industry.

8.2- Process of WTP at Cotton Club (BD.) Ltd:



8.3- Chemical List & Function:

Chemical Name	Function
Common Salt (NaCl)	Resin Generation
Sodium Hypo-Chloride	It used for odour removal ,water disinfection agent.
Hydro-Chloric Acid	pH Control

8.4- Water Management:

Cotton Club (BD.) Ltd are trying to reduce dependency on underground water by deloping –

- ➔ Rain water harvesting plant.
- ➔ Re use m/c cooling water & Steam condensate.
- ➔ Establishing the control on water consumption in Process.
- ➔ Re use of wash & surface water.



Figure: Water Treatment Plane

CHAPTER: 09

ETP (Effluent treatment plant)

9.1- Effluent treatment plant (ETP):

ETP (Effluent Treatment Plant) is a process design for treating the industrial waste water for its reuse or safe disposal to the environment. Now a days effluent treatment plant is very necessary for all textile industry. Because without ETP the pollutate water dispose to the environment that's why the environment become pollutate by this polluted water

9.2- Types of ETP:

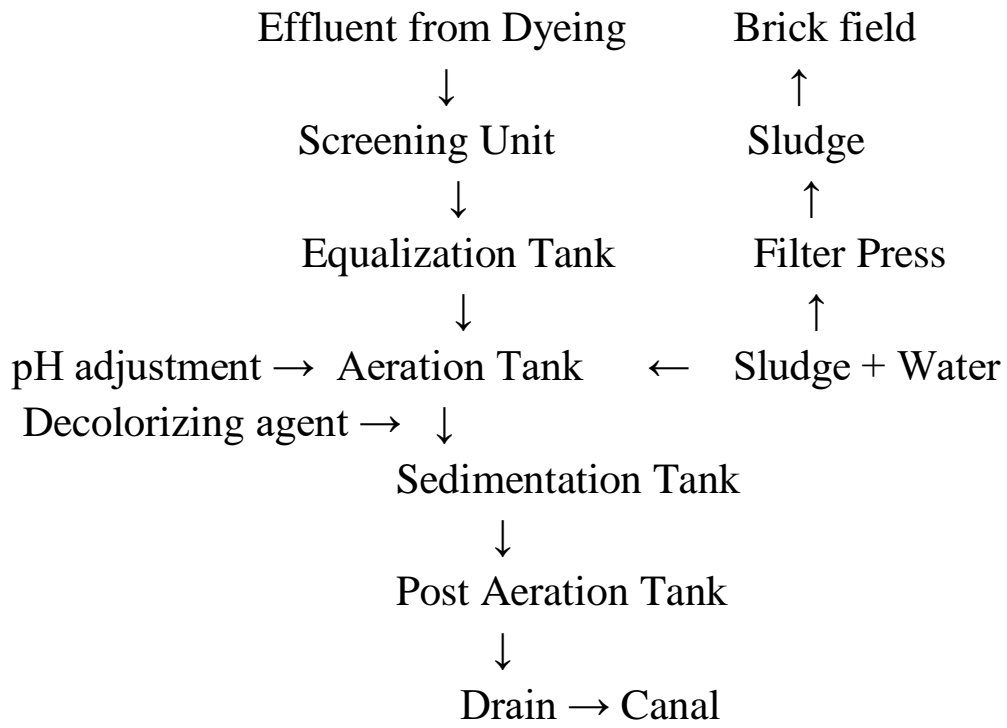
- Chemical ETP
- Bio-chemical ETP
- Biological ETP

9.3- Biological ETP: Biological ETP is the process where the waste water is treated by using micro-organism (mostly use bacteria). In biological ETP plant the bacteria remove or reduce the concentration of organic or inorganic compound.

The basic units needed for biological treatment are:

1. Screening;
2. An equalization unit;
3. A pH control unit;
4. An aeration unit; and
5. A settling unit.

9.4- Process of Biological ETP



9.5- Chemical List & Function:

Chemical Name & Micro-Organism	Function
Acetic acid	It control the pH.
De-Coloration	It remove the color from Waste water.
Urea	It used for food of Bacteria.
Bacteria	It remove or reduce the concentration of Organic & Inorganic compounds.

9.6- Inflow & Outflow of ETP:

- ✦ ETP Inflow: 0-240m³/hr
- ✦ ETP Outflow: 240m³/hr



Figure : Screening Unit



Figure : Equalization Tank



Figure : Sedimentation Tank



Figure : Filtration

CHAPTER: 10

Maintenance

10.1- Maintenance:

The technical meaning of maintenance involves functional checks, servicing, repairing or replacing of necessary devices, equipment, machinery and supporting utilities in industrial installations. In engineering, we use this terminology for maintaining smooth and uninterrupted performance of machines, tools and metallurgical characteristics in practical uses.

10.2- Objectives:

- To keep plant, machines, tools ready for proper operations.
- To ensure proper production & proper safety.

10.3- Maintenance Tools & Equipment's:

Tools & Equipment's Name	Function
Combination tools / spanner	Tightening & loosening of nuts & bolts.
Slide Range	Tightening & loosening of nuts & bolts.
Pipe threat cutting tools	To cut the threat in pipe.
Hole punch	Punching the hole.
Heavy scissor	Cutting steel sheet.
Drill machine	For drilling.
Grinding M/C	For grinding & cutting of steel.
Welding M/C	For welding.
Hammer	For right angling.

CHAPTER: 11

Cost

11.1- Costing of the product:

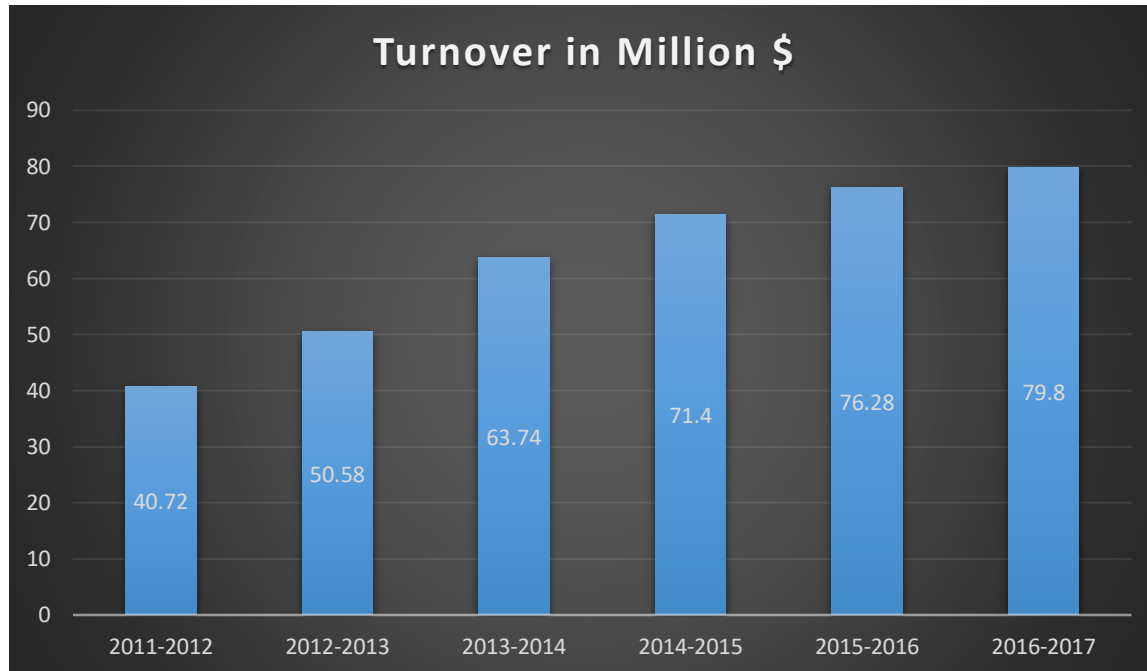
Costing system mainly describes how much cost of the final product is fixed by the company/beneficial. According to buyer/customers requirement at first grey fabric is prepared from knitting section. Then calculated how much dyestuff and chemical is required to the end of the processing of that specific fabric .After that, the final cost is fixed including some profit. Then the unit price is offered to the buyer for approves it.

11.2- Costing of the product is done by the consideration of the following factors:

- ✦ Amount raw materials consumed.
- ✦ Direct Labour
- ✦ Indirect Labour
- ✦ Factory Cost
- ✦ Officer and administrative cost
- ✦ Sales and distribution cost
- ✦ Profit, etc.

N.B: Costing is the secret matter of this factory. They are not interested to share any data about costing of this factory.

11.3- Factory Turn-over:



Serial No	Years	In Million \$
01	2011-2012	\$ 40.72 Million
02	2012-2013	\$ 50.58 Million
03	2013-2014	\$ 63.70 Million
04	2014-2015	\$ 71.40 Million
05	2015-2016	\$ 76.28 Million
06	2016-2017	\$ 79.80 Million

CHAPTER: 12

Utility Support

Utility Support

Cotton Club has a strong backup of utility support, has its own captive power plant & generates its own power for uninterrupted proceeding.

12.1- List of Machineries:

Names	Origin	Brand	Unit
Generator 900 & 500 KW	USA	Waukesha	02 Sets
Boiler (9.7 Tons)	USA	COCHRAN	02 Sets
Compressor 125 V ; Motor Capacity 90 KW	Belgium	Air Roll	02 Sets
Compressor 60 V ; Motor Capacity 45 KW	Belgium	Air Roll	02 Sets
Generator 500 KVAR	UK	Perkins	01 Sets
Condense Water Recovery System	INDIA	FORBES MARSHALL	01 Sets



Figure: Boiler



Figure: Generator

CHAPTER: 13

Compliance

13.1- Compliance Issue:

Compliance means comply something i.e. yield to the wishes another. The main aim of compliance is to ensuring the all labor rights and facilities according to buyer code of conduct.

13.2- Different compliance issues which they are obeyed:

<p><u>Admin & HR dept.:</u></p> <ul style="list-style-type: none"> ❖ Personnel policies: <ul style="list-style-type: none"> ✓ Recruitment policy ✓ Leave and holiday policy ❖ Attendance and leave register card: <ul style="list-style-type: none"> ✓ Their weekly working hour not more than 66 hours including overtime in a week. ✓ They have the approved manpower list. 	<p>Health & hygiene:</p> <ul style="list-style-type: none"> ✓ First aid ensures. ✓ Medicine registers. ✓ Maternity and pregnancy register. ✓ Pure drinking water <p>Safety:</p> <ul style="list-style-type: none"> ✓ Safety committee ✓ Fire-fighting committee ✓ Rescue committee ✓ Broken needle register ✓ Needle detector ✓ Fire alarm & switch ✓ Evacuation plan ✓ Rubber mats to every iron man. <p>Welfare:</p> <ul style="list-style-type: none"> ✓ Welfare committee ✓ Day care center ✓ Canteen facility
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Chapter: 14

Impact of Internship

14.1- Impact of Internship:

By means of the practical knowledge it's possible to apply the theoretical knowledge in the practical field. For any technical education practical experience is almost equally important in association with the theoretical knowledge.

The industrial attachment is the process which builds understanding skill and attitude of the performer, which improves his knowledge in boosting productivity and services. University education provides us vast theoretical knowledge as well as more practical attachment, despite all these industrial attachment help us to be familiar with the technical support of modern machinery, skillful about various operation stages.

It also provides us sufficient practical knowledge about production management, Productivity evaluation, work study, efficiency, industrial management, production planning & control, production cost analysis, inventory management, purchasing, utility & maintenance of machinery and their operation techniques etc. the above mentioned can not be achieved successfully by means of theoretical knowledge only. This is why it should be accomplished with practical knowledge in which it is based on industrial attachment makes us reliable to be accustomed with the industrial atmosphere & improve courage & inspiration to take self-responsibility.

We have prepared this report as required in completion of our attachment course in regarding guideline given by the University's authority which will lead to a strong guideline & milestone for our future carrier.

CHAPTER: 15

Conclusion

15.1- Conclusion:

Industrial attachment program send us to the expected destiny of practical life. Through The completion of Two Month industrial attachment at COTTON CLUB (BD.) 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.

Sample attachment

<p>Fabric Type: Single Jersey (100% Cotton fabric) Color: Dark Green</p>	<p>Fabric Type: Single Jersey (80% Cotton & 20% Polyester)Terry Color: Black</p>
<p>Fabric Type: Single Jersey (100% Cotton)Terry Color: Navy</p>	<p>Fabric Type: Single Jersey slub (100% Cotton) Color: Black Iris</p>