Department of Textile Engineering
Faculty of Engineering

Course Title: Industrial Attachment
Course Code: TE 431

Report on
Industrial Attachment
at
Scandex Textile Industries Ltd.
(Pannam Group)

Submitted by:
Tarun Halder
ID: 161-23-4587
Department of Textile Engineering
Daffodil International University

Supervised by:
Mr.Sumon Mozumder
Assistant Professor
Department of Textile Engineering
Daffodil International University

This report submitted in partial fulfillment of the requisite for the degree of Bachelor of Science in Textile Engineering.

Fall 2018

Department of Textile Engineering
Faculty of Engineering

Course Title: Industrial Attachment
Course Code: TE 431

Report on
Industrial Attachment
at
Scandex Textile Industries Ltd.
(Pannam Group)

Submitted by:
Tarun Halder
ID: 161-23-4587
Department of Textile Engineering
Daffodil International University

Supervised by:
Mr.Sumon Mozumder
Assistant Professor
Department of Textile Engineering
Daffodil International University

This report submitted in partial fulfillment of the requisite for the degree of Bachelor of Science in Textile Engineering.

Fall 2018

DECLARATION

I hereby declare that, this internship has been done by under the supervision of **SumonMozumder, Assistant Professor**, Department of Textile Engineering, Faculty of Engineering, Daffodil international University. I also declare that, neither this report nor any part of thisreporthas been submitted on the other hand for award of any degree or diploma.

Submitted By:

Tarun Halder
ID: 161-23-4587
Department of Textile Engineering
Daffodil International University

LETTER OF APPROVAL

The internship report on **CANDEXTEXTILE INDUSTRIES LTD.** is prepared by **TarunHalder** of bearing **ID: 161-23-4587**. This report is submitted in partial fulfillment of the requirements for the degree of BACHELOR OF SCIENCE IN TEXTILE ENGINEERING. The whole report is prepared under my supervision and guidelines. During the internship the student was found sincere, punctual and hard working. I wish him every success in life.

SUMON MOZUMDER

ASSISTANT PROFESSOR

DEPARTMENT OF TEXTILE ENGINEERING

FACULTY OF ENGINEERING

DAFFODIL INTERNATIONAL UNIVERSITY

ACKNOWLEDGEMENT

All pleasure goes to the Almighty God to give me strength and ability to complete my two months long industrial attachment at **Scandex Textile Industries Ltd.** It was a great opportunity for us to complete the industrial attachment with the assistance of persons employed in Industry name.

We feel grateful to our academic supervisor **SumonMozumder,** Assistant Professor, Department of Textile Engineering, Faculty of Engineering, Daffodil international University as well as to **Mr. Md. Abu Bakar Siddique (AGM)** my industry supervisor, my factory supervisor for their continuously guiding me about the development and preparation of this training report. They have enriched me with sharing necessary theoretical and practical ideas and supervised me to complete this report on time.

I would like to express my thanks to**Prof. Dr. Md. MahbubulHaque**, Head, Department of Textile Engineering, Faculty of Engineering, Daffodil international University for his kind help to finish my training report. **I** would like to express my thanks to **Prof. Dr. Md. Zulhash Uddin**, Dean, BUTex for providing **me**necessary information to complete the report.

I am also grateful to the supervisors, technicians, operators and all other staffs of **Scandex Textile Industries Ltd.**Who were most cordial and helpful to me during the tenure of internship.

Finally, I would like to express a sense of gratitude to **my** beloved parents and friends for their mental support, strength and assistance throughout writing the training report.

This project report is dedicated to my beloved parents

TABLE OF CONTENTS

Contents Page No.

CHAPTER-1

EXECUTIVE SUMMARY

CHAPTER-1

EXECUTIVE SUMMARY

The internationally avowed buyer & consumer are looking for those countries for conducting their apparel product, where different types of industries have established which one stop source for global apparel market, safety & meet consumer value in the term of quality, price, safety & environmental impact. It confirm the complete compliance with the internationally standard quality. It provide internationally standard quality employees. Bangladesh has many standard quality textile industries, where producing high quality textile product. **"Scandex textile industries Ltd"** is one of the company of (panama group).This company producing high standard textile product. This company has many different types of machine as like as, knitting, dyeing, finishing etc. this machine supplies from Germany, Taiwan, Italy & any other highly manufacturing countries, that's are very latest model. Those machine production performance is in per days. The products controlled by the skilled person. Well brand dyes& finishing chemical are using this production process. This company produces their product for buyer & clients those are come from many several countries. They follow system always time, cause their product create not to be any hamper.

By this report, I tried to give some information about **"Scandex textile industries Ltd",** where producing Knitting, Dyeing & Finishing textile products. I also observed that this company always time trying to production best quality textile products that was the fulfillment of the buyer requirement from the following different types of internationally recommended methods.

The length of my training period is two month. I am joining my training on **October 7, 2018 & it finished on December 1, 2018**

CHAPTER-2
INFORMATION ABOUT FACTORY

CHAPTER-2

INFORMATION ABOUT FACTORY

2.1 Information about factory

Company profile:

Scandex Textile Industries Ltd. Is a 100% export oriented Textile Industries the uniteofPanam group established with the commitment to case the global needs. This in industries fulfill the all requirement of all consumer & other unites. This industries has more employment those are very skilled & hard worker. This project surrounded the knitting, Dyeing & Finishing processing sector that always time production to be one stop service.

This project was establish, inthat day this project grew up more glory full standard, which is possible for the more skilled development persons. The unique arrangement of organization managerial & technical term are both all latest. The best use of continuous development of Human Resources by providing them internationally standard environment & equal opportunity.

"**Scandex Textile Industries Ltd"** has been established with the objectives & vision to cater the newly project system manufacturing textile Industries. This Industries has one stop service being committed to on time delivery Quality Assurance, price & other accountability.

This Industries is situated at **Uttar Gazaria,kaliakoir, Gazipur-1750.**This factory outside has high way road that was well communication by other factory & easily reach to anywhere.

2.2 Factory Layout

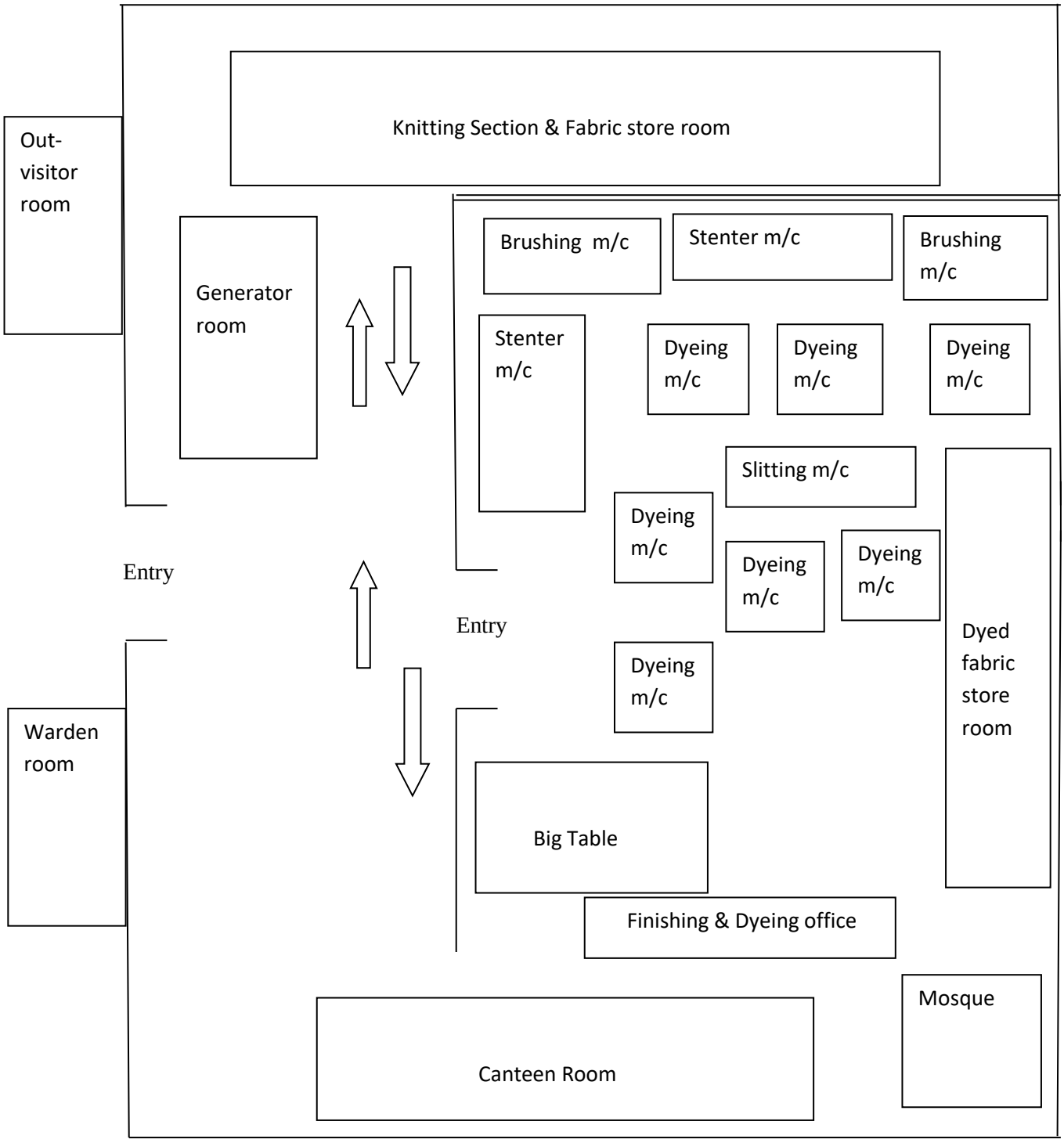


Figure: 2.2 Factory Layout

- ✓ Name of the Company : Scandex Textile Industries Ltd.
- ✓ Type : 100% export oriented composite knit Textile.
- ✓ Year of founded :
- ✓ Status : Privet Company Ltd.(A concern of PanamGroup)

- ✓ Factory :
  Uttar Gazaria,Kaliakor,Gazipur-1750

- ✓ Commercial Headquarter:

  10/3, Toyenbeecirculer road (3rd floor).

  Motijheel C/A, Dhaka-1000.Phone: +88-02-9565884,9568698

  Fax: +88-02-9551516E-mail:info@kbtraders-bd.com

- ✓ Products Mix :

  Knitted grey fabric: Plain single jersey, single jersey, Heavy jersey, waffle, Rib, Interlock, Single stripe, Single pique, Double pique, Fleece, French terry,Terry, Collar Cuff Etc.

- ✓ Production capacity & actual production:

Production Capacity: (Knitting)

Actual production :17000 kg/ day

Production Capacity: (Dyeing)

Actual production : 1000 kg/day

Production Capacity: (Washing)

Actual production :8000 kg/day

- ✓ Production Oriented different departments:

  Knitting.
  Batching.
  Dyeing Pretreatment.
  Dyeing lab.
  Chemical house.
  Washing.
  Finishing.
  Quality control.
  Maintenance.
  Utilities.

- ✓ Department of Supporting:

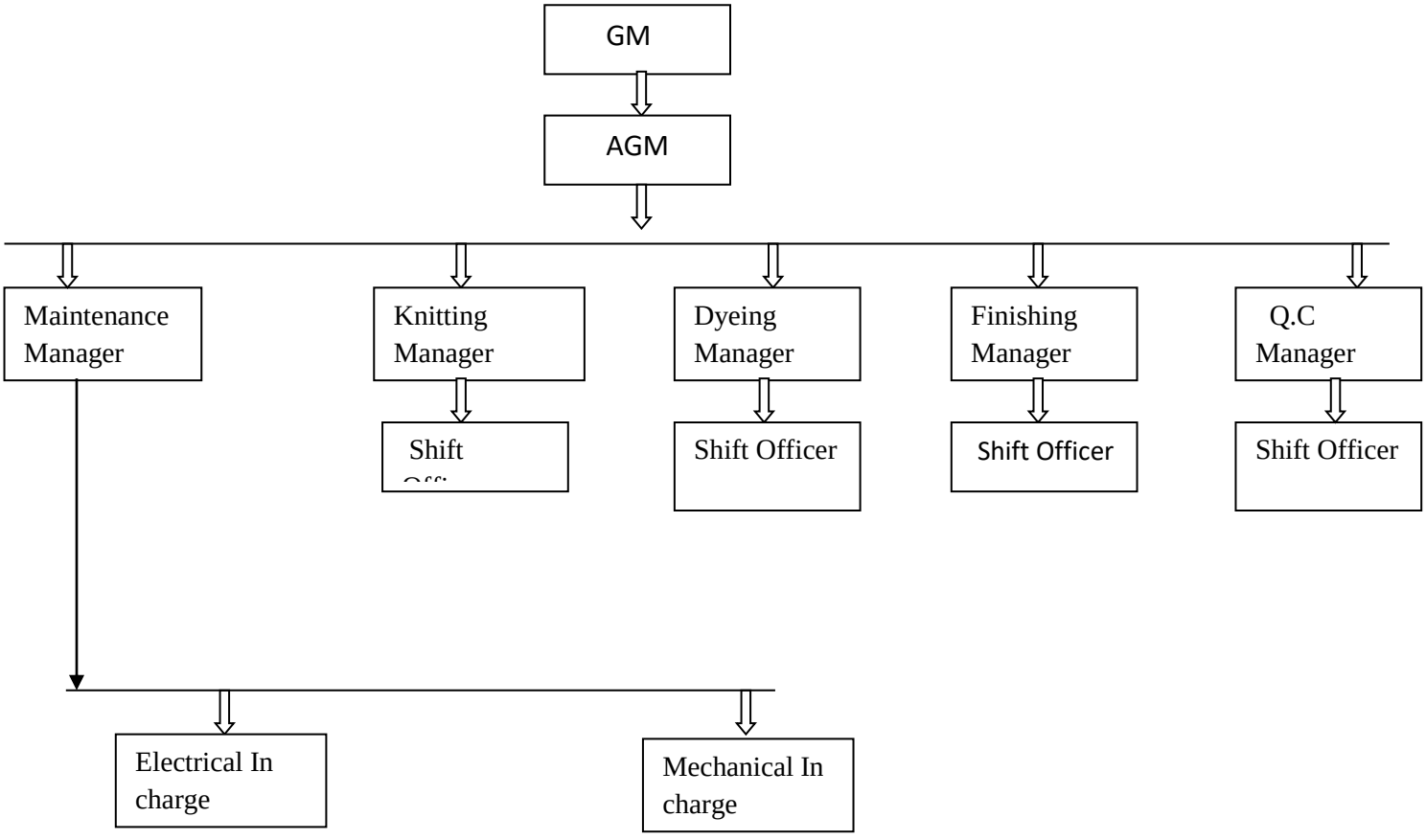
HRD.
Marketing.
Procurement.
Finance & Accountings.
Administration.
Security.

- ✓ Shift Change :

This factory worked at two shifts &every shift duration time istwelvehours. Shift is changed after a week on a certain day.

Day shift: From 8 am-8 am.
Night shift: From 8 pm-8 pm.

2.3 Organ Gram of the Company:



2.4 **Vision:**

- ✓ To establish as a one stop source for the Global Knit Textile market and to satisfaction and meet customer's expectation by developing and providing products and services on time, which offer value in terms of Quality, Price, Safety& Environmental impact.
- ✓ Assuring complete compliance with the international quality standards and also providing the employees internationally acceptable working condition and standards.
- ✓ To promote the development and to use human talent & equal opportunity of employment
- ✓ 'Scandex Textile Industries" Ltd. procure the most advanced & sophisticated technology suitable for producing desired product and attain highest level of competence through continuous development of the professional management system and to ensure complete transparency in all aspect of business.

2.5Mission:

Scandex realizes the need to stake out a competitive segment in the changing global markets. of today through technological excellence and human expertise. Scandex is committed to transpose its local success to the world scene

2.6 List of Buyers:

2.7 A Short View of the Company:

Figure: 2.7

CHAPTER-3

DETAILS OF ATTACHMENT

3.1 KNITTING SECTION

CHAPTER-3

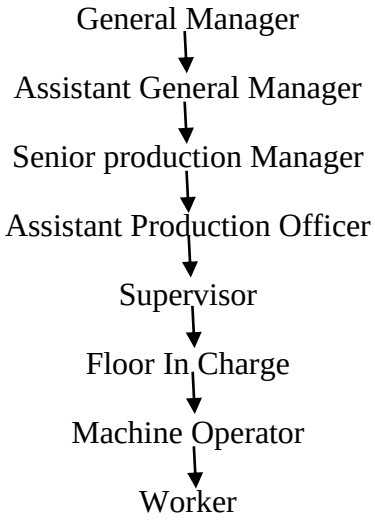
DETAILS OF ATTACHMENT

3.1.1 Introduction

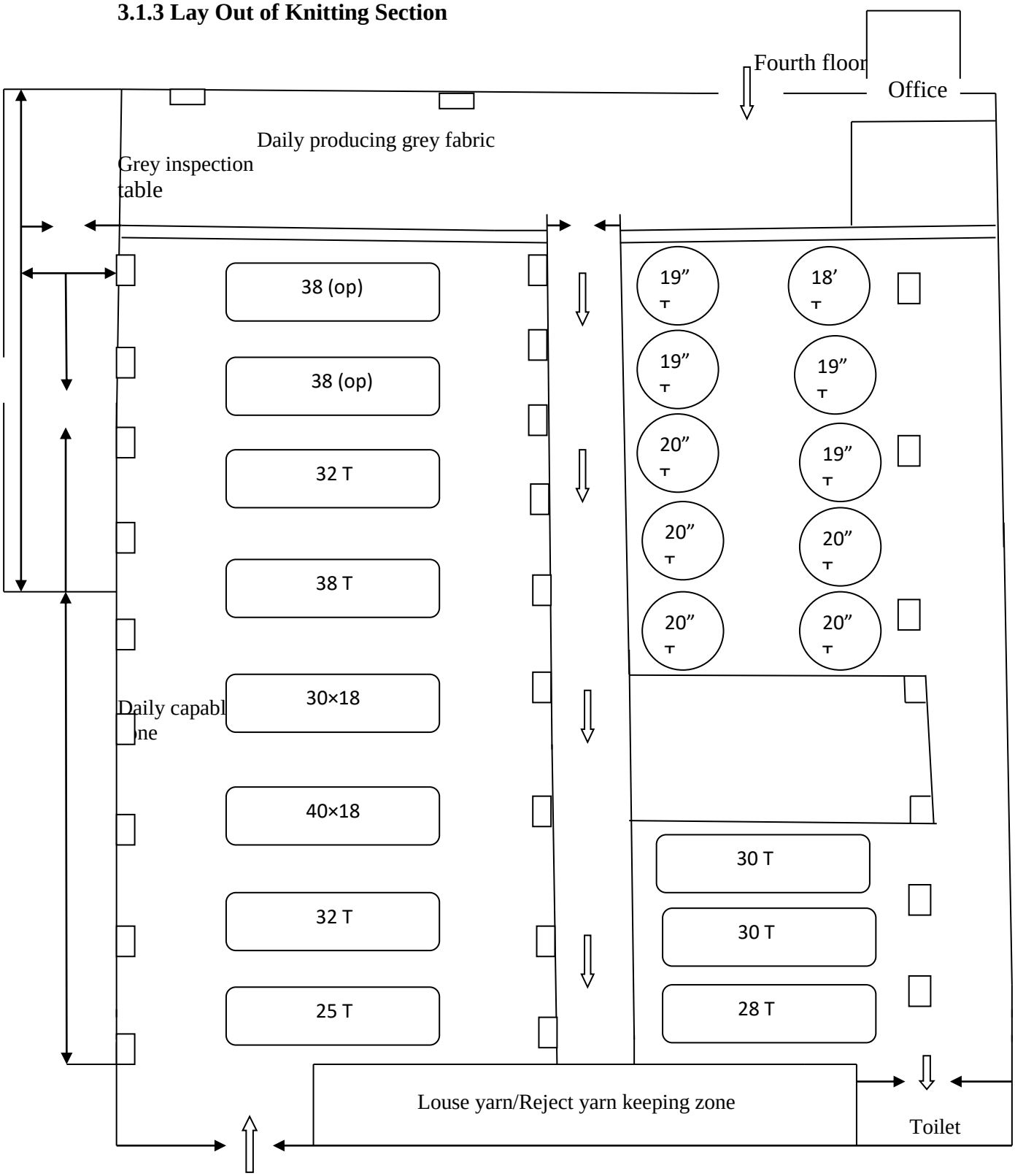
"Scandex Textile Industries Ltd." is capable of producing stripes of any width and enormous colors. The engineering stripes machines are used for producing such fabrics. Except this feeder stripes are also produced. Single jersey fabrics and its derivatives like lacoste, polo-pique, terry fleece etc are produced. Rib and interlock fabrics and their different derivatives such as 2x2, 6x3 etc. are also produced. Different figured fabrics can be produced by semi jacquard machined by varying the tucking lengths and looping sequences.

Collar and cuffs of any designs are produced here in the semi jacquard and jacquard machines. The jacquard design can be computerized and easily transferred to the knitting machine by Floppy disks. The yarn that used in the body fabric is also used in producing collar and cuff

3.1.2 Organ gram



3.1.3 Lay Out of Knitting Section



3.1.4 Machine Specification (Flat Bed Knitting M/C)

Machine No.	01 & 04
Machine Type	Jacquard
Country of Origin	Japan
Brand Name	KAUO-HENG
No. of Needle	1120 X 2
Gauge	14
No. of Feeder	6

Machine No.	02, 03, 05
Machine Type	Semi Jacquard
Country of Origin	Japan
Brand Name	SHIMA SEIKI
No. of Needle	840 X 2
Gauge	14
No. of Feeder	4

3.1.5 Specification Of Single Jersey Circular Knitting M/C

M/C No	Diameter	Gauge	Feeder	Needle	Brand Name	Origin
01	18 inch	24 G	54 F	1357	Year China	Taiwan
02	19 inch	24 G	57 F	1432	Year China	Taiwan
03	19 inch	24 G	57 F	1432	Year China	Taiwan
04	19 inch	24 G	76 F	1432	Lisky	Taiwan
05	19 inch	24 G	76 F	1432	Lisky	Taiwan
06	20 inch	24 G	60 F	1507	Year China	Taiwan
07	20 inch	24 G	60 F	1507	Year China	Taiwan
08	20 inch	24 G	80 F	1507	Lisky	Taiwan
09	20 inch	24 G	60 F	1507	Lisky	Taiwan
10	20 inch	24 G	80 F	1507	Year China	Taiwan
11	21 inch	24 G	63 F	1583	Year China	Taiwan
12	21 inch	24 G	84 F	1583	Lisky	Taiwan
13	21 inch	24 G	84 F	1583	Lisky	Taiwan
14	22 inch	24 G	66 F	1658	Year China	Taiwan
15	22 inch	24 G	88 F	1658	Lisky	Taiwan
16	22 inch	24 G	88 F	1658	Lisky	Taiwan
17	23 inch	24 G	69 F	1733	Year China	Taiwan
18	23 inch	24 G	92 F	1733	Lisky	Taiwan
19	24 inch	24 G	72 F	1809	Year China	Taiwan
20	24 inch	24 G	80 F	1809	Lisky	Taiwan
21	25 inch	24 G	75 F	1884	Year China	Taiwan
22	28 inch	24 G	84 F	2110	Year China	Taiwan
23	30 inch	24 G	90 F	2260	Year China	Taiwan
24	25 inch	24 G	90 F	1874	Year China	Taiwan
25	24 inch	24 G	102 F	1809	Year China	Taiwan
26	34 inch	24 G	103 F	2562	Lisky(open dia)	Taiwan
27	34 inch	24 G	108 F	2562	Lisky(open dia)	Taiwan
28	34 inch	24 G	108 F	2562	Lisky(open dia)	Taiwan
29	34 inch	24 G	108 F	2562	Lisky(open dia)	Taiwan
30	36 inch	24 G	108 F	2713	Year China	Taiwan
31	36 inch	24 G	114 F	2713	Lisky	Taiwan
32	24 inch	24 G	126 F	1809	Lisky	Taiwan
33	25 inch	24 G	102 F	1884	Lisky	Taiwan
34	24 inch	24 G	108 F	1809	Lisky	Taiwan
35	24 inch	24 G	108 F	1809	Lisky	Taiwan

36	24 inch	24 G	108 F	1809	Lisky	Taiwan
37	38 inch	24 G	126 F	2864	Lisky	Taiwan
38	40 inch	24 G	102 F	3014	Lisky	Taiwan
39	28 inch	24 G	90 F	2110	Lisky	Taiwan
40	29 inch	24 G	93 F	2185	Lisky	Taiwan
41	30 inch	24 G	96 F	2260	Lisky	Taiwan
42	30 inch	24 G	96 F	2260	Lisky	Taiwan
43	30 inch	24 G	96 F	2260	Lisky	Taiwan
44	32 inch	24 G	102 F	2412	Lisky	Taiwan
45	32 inch	24 G	102 F	2412	Lisky	Taiwan
46	38 inch	24 G	105 F	2864	Lisky	Taiwan
47	34 inch	24 G	108 F	2562	Lisky	Taiwan
48	34 inch	24 G	108 F	2562	Lisky	Taiwan
49	34 inch	24 G	108 F	2562	Lisky	Taiwan
50,51,52	36 inch	24 G	114 F	2713	Lisky(open dia)	Taiwan
53	38 inch	20 G	120 F	2386	Lisky(open dia)	Taiwan
54	40 inch	20 G	126 F	3014	Lisky(open dia)	Taiwan
55	26 inch	24 G	84 F	1959	Lisky(open dia)	Taiwan
56,57	27 inch	24 G	87 F	1959	Lisky(open dia)	Taiwan
58	32 inch	24 G	87 F	2412	Year China	Taiwan
59	31 inch	18 G	60 F	1752	Year China	Taiwan
60,61	32 inch	18 G	68 F	1809	Lisky(open dia)	Taiwan
62	36 inch	24 G	76 F	2713	Lisky(open dia)	Taiwan
63,64	38 inch	18 G	76 F	2148	Lisky	Taiwan
65,66	40 inch	18 G	84 F	2260	Lisky(open dia)	Taiwan
67,68,69	40 inch	18 G	84 F	2260	Year China	Taiwan
70	42 inch	18 G	84 f	2343	Lisky(open dia)	Taiwan
71	42 inch	24 G	132 F	3165	Lisky(open dia)	Taiwan
72	44 inch	18 G	92 F	2487	Lisky(open dia)	Taiwan

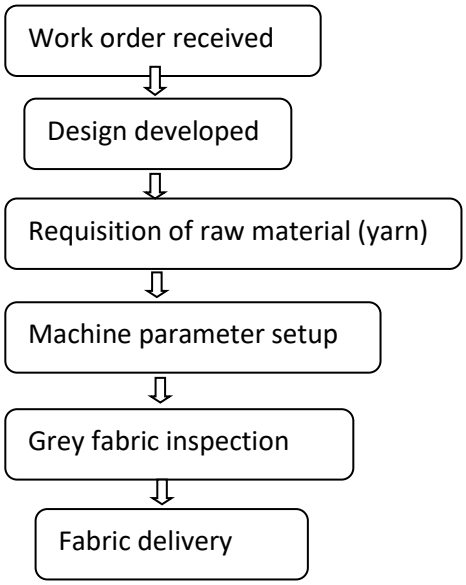
3.1.6 Production parameters of knitting machine

- ✓ Stitch Length (SL)
- ✓ GSM
- ✓ Diameter
- ✓ Gauge
- ✓ RPM
- ✓ Yarn Count.

3.1.7 Production flow chart of knitting M/c

The knitting section in Square Knit fabrics Ltd. is well decorated with modern machineries, state-of-the-art technology, well established process sequence, quality assurance with an ergonomic environment. This section is capable of producing versatile circular weft knitted structures especially on engineering stripes and semi jacquard designs. The rib based collar and cuff has also been produced in flat knitting at a different shade equipped with semi jacquard and jacquard V- bed flat knitting machines. This section is capable of meeting the production demand of Square Knit Fabrics Ltd. fully. In this purpose we supposed to include the production stages, parameters, resources, quality assessments machinery specification alone with the machinery layout in a short time span primarily.

Knitting Process flow chart diagram



3.1.8 GSM

It is the crucial parameter that is checked and controlled at different staged of processing the fabric after knitting to finishing. Fabric GSM in knitting can be controlled by the following ways:

- ✓ By varying the loop length by VDQ pulley
- ✓ By varying the no. of loops by needle gauge setting
- ✓ By using different count of yarn

The yarn count, in all cases, has prescribed by the buyers. So machine setting is the only way to control the grey GSM. The final GSM in the finished fabric depends on the finishing treatments and parameters of finishing machineries.

Fabric widthFabric width can be controlled by changing cylinder diameter or by changing machine

M/c RPMMachine rpm is adjusted with the lead time for production. When lead time is very short then RPM may increase at a certain level for a definite count and strength of yarn. So it also depends on the yarn parameter and also with structure to be produced.

3.1.9 Loop Length Loop length determines the fabric GSM. It can be controlled by changing the Diameter of VDQ pulley. In Mayer and Cie machine it can be controlled digitally.

No of feeder or number of cone:
It depends on the urgency of production, available cone packages, color to be knit and structure of the fabric.
GaugeNeedle gauge determines the number of loops in a course which in terms determine the GSM of the fabric.

3.1.10 Production Calculation

For machine01:

No. of Needle = π × Machine Diamètre (D) × Machine Gauge (N)

= 3.1416× 18×24

= 1357

Yarn Count = 20/1 Ne No. of Feeder = 54

Machine RPM = 40

Stitch length = 2.3 mm

Efficiency = 85% = 0.85

Shift = 8 hr. = 8 × 60 = 480 min.

$$\text{Production/Shift} = \frac{\text{No. of Needle} \times \text{No. of Feeder} \times \text{Stitchlength (mm)} \times \text{RPM} \times \text{Shift} \times \text{Efficience}}{10 \times 2.54 \times 36 \times 20 \times 840 \times 2.206}$$

$$= \frac{1357 \times 54 \times 2.3 \times 40 \times 480 \times 0.85}{10 \times 2.54 \times 36 \times 30 \times 840 \times 2.206}$$

= 54.110 Kg

Production of the machine is 54.110Kg/8 hour.

GSM Calculation

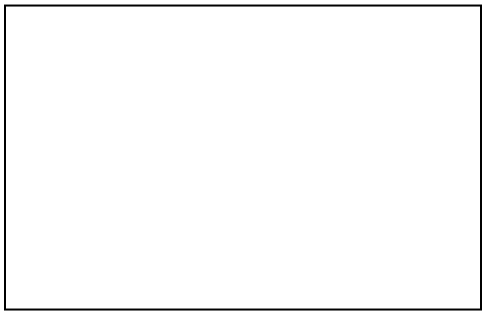
Given that,
WPI=35 CPI=39
Stitch length=2.3 mm
Yarn count=20s

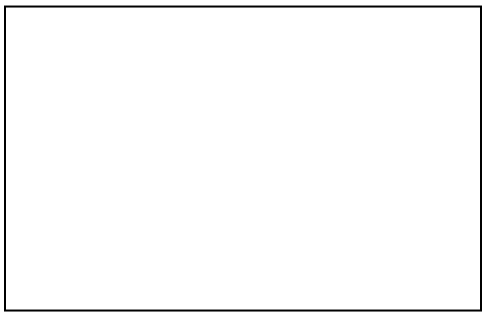
$$\textbf{GSM} = \frac{\text{WPI} \times \text{CPI} \times \text{Stritchlength (mm)} \times (39.37)^2 \times 453.6}{1000 \times 840 \times \text{Ne} \times 0.9144}$$

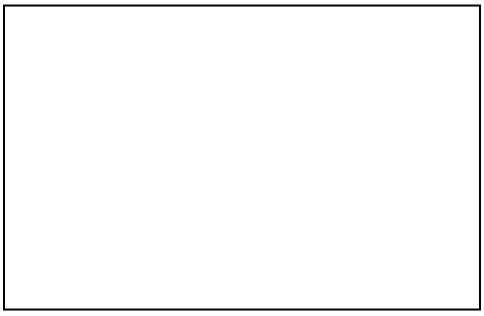
$$= \frac{35 \times 39 \times 2.3 \times (39.37)^2 \times 453.6}{1000 \times 840 \times 20 \times 0.9144}$$

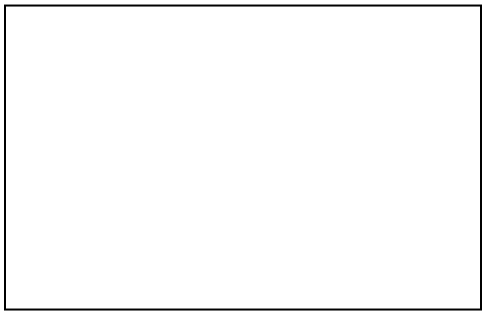
$$= 144$$

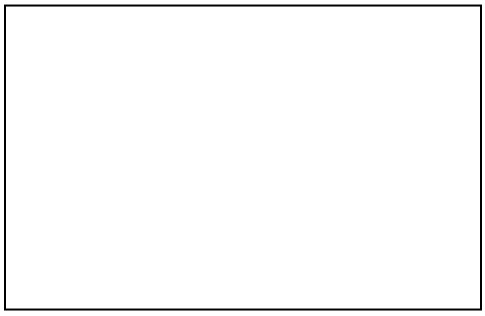
3.1.11 Sample of knit Fabric

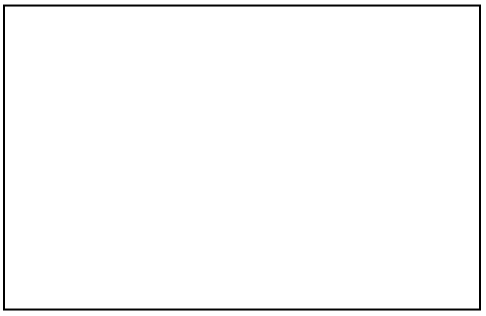


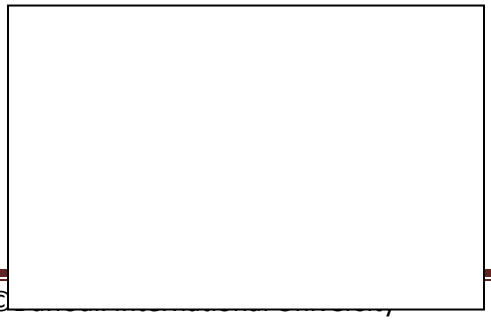


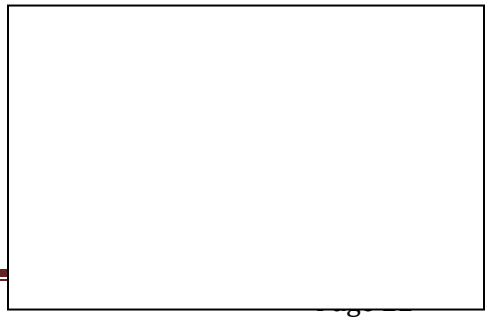












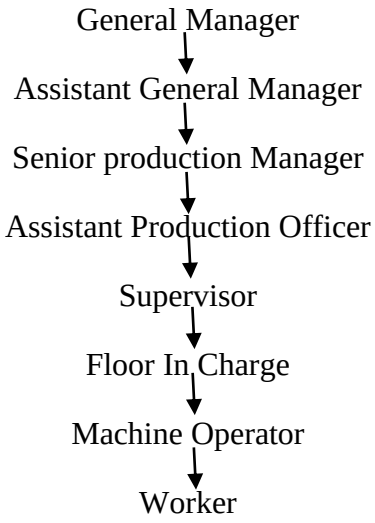
3.2 DYEING LABORATORY SECTION

DYEING LABORATORY SECTION

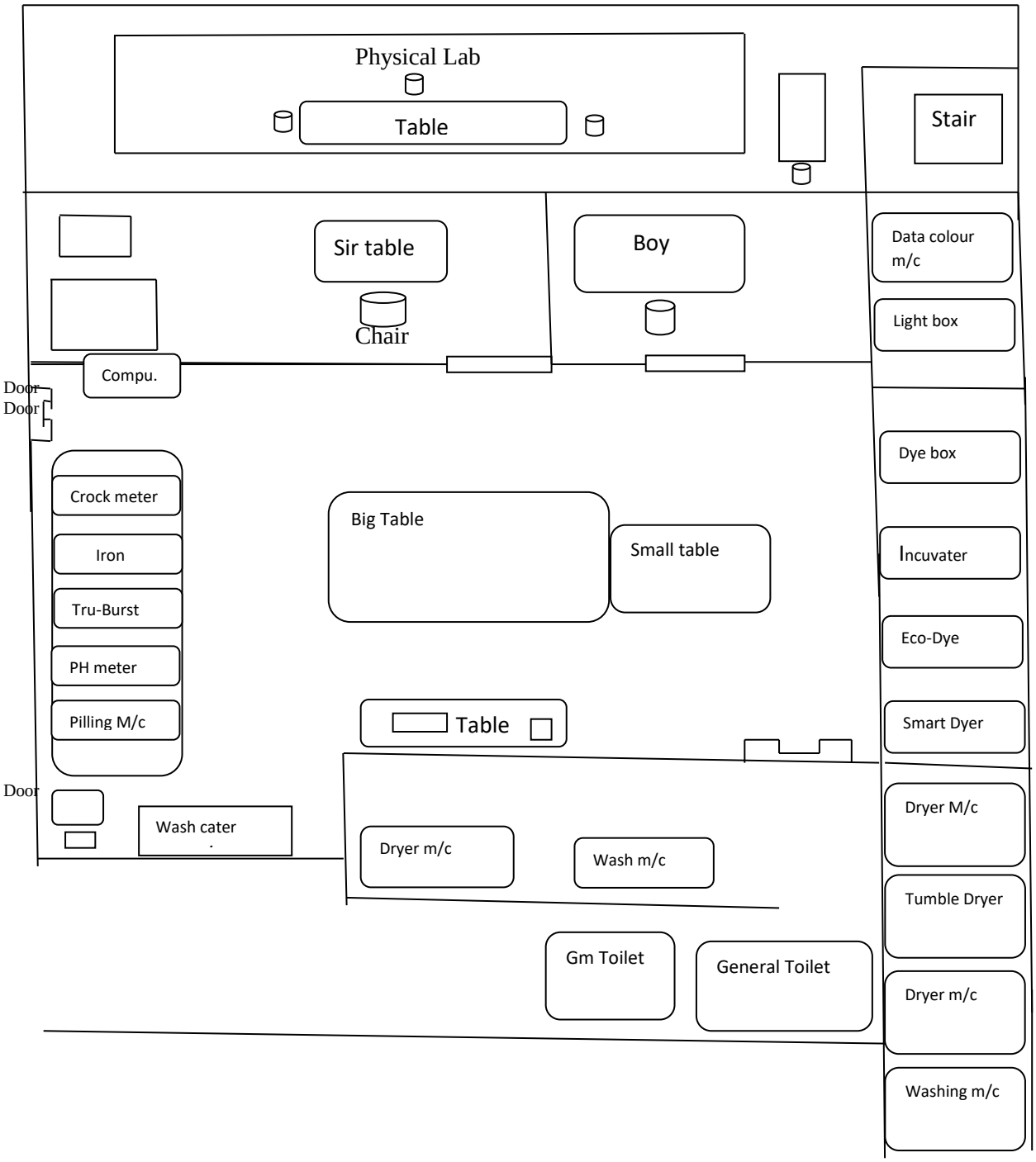
3.2.1 Introduction

Dyeing is the operation of coloring textile with some medians. Before the dyeing some small amount of fabric is dying in the dyeing laboratory. There is use small amount of dyes & chemicals. It is the segment in which raw fabric are dyed by the coloring substance. This section fabric is dyed for buyer requirement sample. Formally before going to the bulk production, a sample fabric dyeing into the laboratory. If here is produce desire shape color fabric, then it is go to for dyeing of large amounts production. Primary recipe is make form the laboratory & give for large amounts fabric dyeing in the dyeing floor. A standard quality fabric dyeing depends is on the laboratory section. Here is physical laboratory that is use for test of some dyed fabric property. Every test manage is depends on the buyer requirements.

3.2.2 Organ gram



3.2.3 Dyeing & Physical Lab Layout



3.2.4 Description of Chemical & Physical Lab Layout

Serial No	Equipment	Manufacturer
01	Light box	UK
02	Robo lab	
03	Bath tab & Rack to keep apparatus, chemicals etc.	
04	Washing M/c	Finland
05	Rapid Washer /Quick Wash Plus	Rapid
06	Electrolux Wascator	SDL
07	Washing machine (Siemens)	Germany
08	Iron on the stand	
09	Spectrophotometer (Data color 600)	USA
10	Pilling tester	Germany
11	PH tester	USA
12	Rubbing tester	

Figure: 3.2.5 Light Box

Brand name: VeriVide
Company name: James. H. Heal
Origin: UK
Purpose: Sample is examined under different lighting media.

With today's complex color requirements, a shade cannot always be assessed under one light source. Several may be needed so that the shade is viewed in applicable conditions

Figure:3.2.6 Sample Dyeing M/c

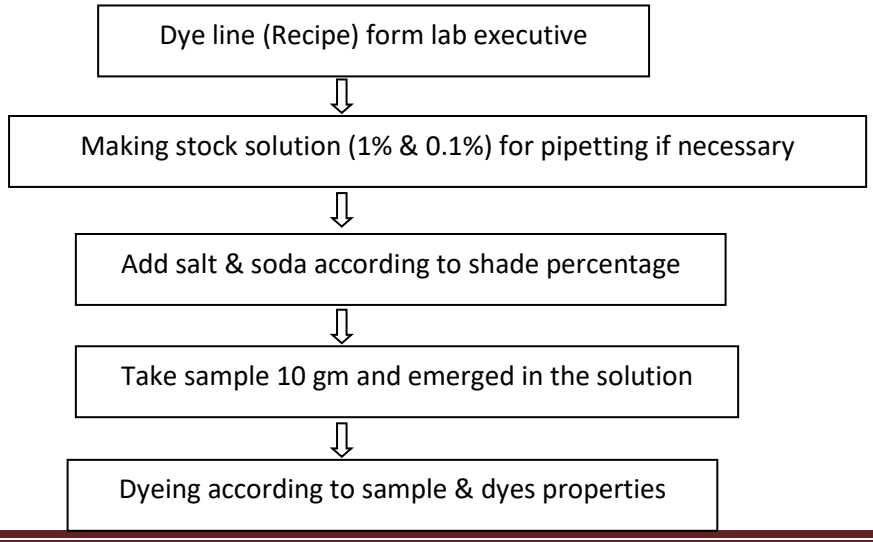
Machine name: Top Speed II
Brand name: AhibaNuanceCompany name: Smarter
Data colorOrigin: America.

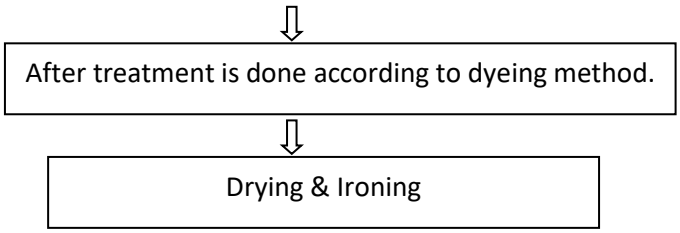
Function: Used for sample dyeing.

Figure: 3.2.7 Washing M/c

Place of Origin: Finland
Used but excellent: Year approx 2006
Model Number: Wascator FOM71MP-Lab
Brand Name: Electrolux.Function:
Used for Washing.

3.2.8 Sample Dyeing Process





3.2.9 Recipe Calculation

$$\text{Dyes (gm)} = \frac{\text{Shade\%} \times \text{weight of the fabric in gm}}{\text{Stock solution \%}}$$

$$\text{Salt (gm)} = \frac{\text{Required amount (g/l)} \times \text{liquor ratio} \times \text{sample weight}}{1000}$$

$$\text{Auxiliary \& chemical (cc/ml)} = \frac{\text{Required amount (g/l)} \times \text{liquor ratio} \times \text{sample weight}}{1000 \times \text{concentration \% stock solution}}$$

$$\text{Required Alkali solution in (cc/ml)} = \frac{\text{Required amount \%} \times \text{weight of substrate} \times \text{LR}}{\text{Conversion value from be to (g/l) of alkali}}$$

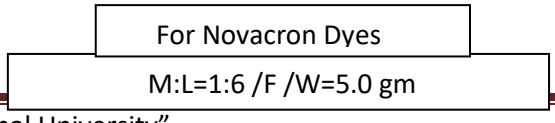
Conversion formula From percentage to (g/l) is as, (g/l) = Required amount % × 10

3.2.10 Stock solution making procedure

For solid,
X gm chemicals/dyes/auxiliaries in the 100 ml water is called x% stock solution.
For liquid,
X ml/cc chemicals/dyes/auxiliaries in the (100 - x ml/cc) water is called x% stock solution.

Caustic soda: The amounts of alkali recommended for the respective procedures refer to caustic soda 30%, 66°Tw (36°Be′). For other concentrations, the amounts can be calculated with the aid of the following table: Density and conc. of caustic soda at 15°C.

Salt solution -25% /soda solution -25% / caustic solution-5%:



Salt -25% /soda -25% /Caustic -5% solution

Shade%	Salt g/l	Soda g/l	Caustic g/l	Salt	soda	caustic	Salt gm	Soda gm	Caustic gm	remark
0.001-0.1%	10	8	×	1.2cc	0.96cc	×	0.3gm	0.24 gm	×	
0.1-0.25%	15	10	×	1.8cc	1.2cc	×	0.45gm	0.3 gm	×	
0.25-0.5%	20	12	×	2.4cc	1.44cc	×	0.6 gm	0.36 gm	×	
0.5-1%	30	14	×	3.6cc	1.68cc	×	0.9 gm	0.42 gm	×	
1-2%	40	16	×	4.8cc	1.92cc	×	1.2 gm	0.48 gm	×	
2-3%	50	18	×	6cc	2.16cc	×	1.5 gm	0.54 gm	×	
3-4%	60	20	×	7.2cc	2.4cc	×	1.8 gm	0.6 gm	×	
4-5%	70	20	×	8.4cc	2.4cc	×	2.1 gm	0.6 gm	×	
5%	80	20	×	9.6cc	2.4cc	×	2.4 gm	0.6 gm	×	
5% up	80	5	×	9.6cc	0.6cc	×	2.4 gm	0.6 gm	0.045 gm	

3.2.11 For Light – Medium Shade (Cotton Fabric) with cold brand dyestuff

Sample Weight = 10 gm
M: L = 1:8
Fabrication
Buyer Name: X

Recipe
Leva Blue CA = 0.034%
Remazol yellow RGB = 0.447%
Remazol Red RGB = 1.051 %
Glauber Salt = 45 gm/l
Soda Ash (20%) = 16 gm/l
Leveling Agent = 1 g/l
Sequestering agent = 1 g/l

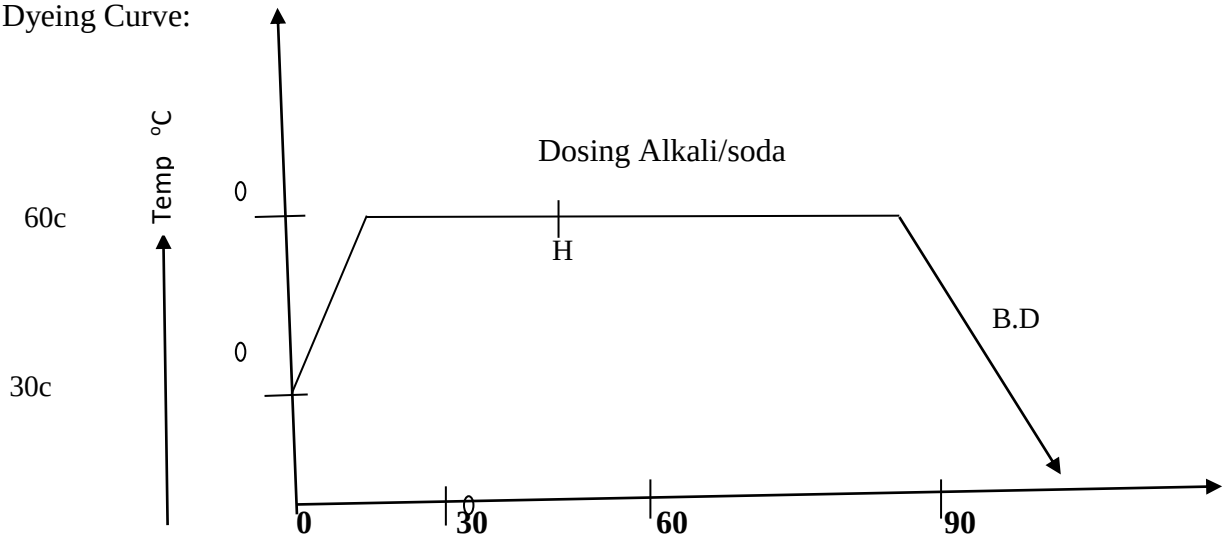
Calculation

Leva Blue CA = 0.034 × 10 = 0.34 cc
Remazol yellow RGB = 0.447 × 10 = 4.47 cc
Remazol Red RGB = 1.051 × 10 = 10.51 cc
Glauber Salt = (45 ×80)/1000 = 3.6 gm
Soda Ash (20%) = (16 × 80)/ (1000×20%) = 6.4 cc
Sequestering agent = (1× 80)/ (1000×10%) = 0.8 cc
Leveling agent = (1× 80)/ (1000×10%) = 0.8 cc

Total Required Water = [80 – (0.34 +4.47 +10.51 +6.4 +0.8+0.8)]

= 56.68 cc

Dyeing Curve:

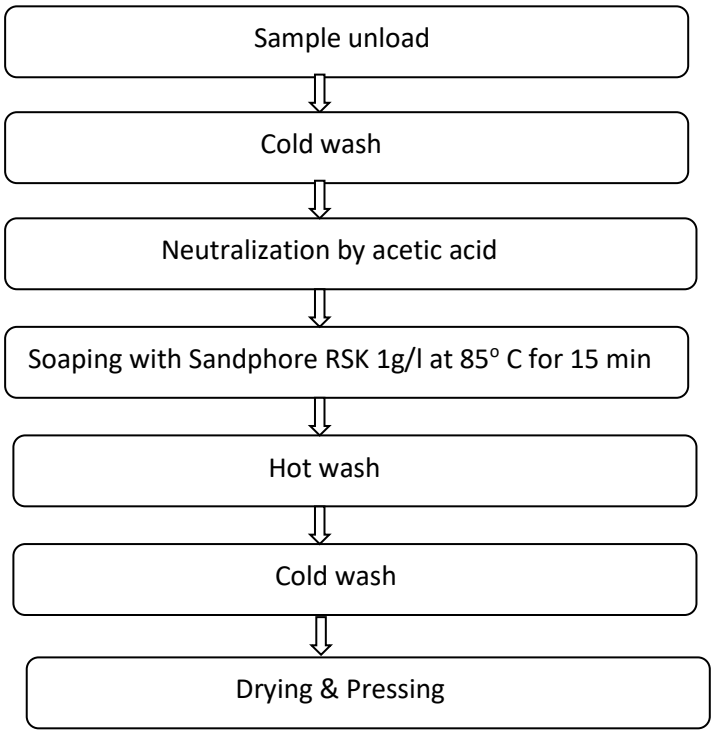


3.2.12 Dyeing Procedure

- ✓ At first, we took required Dyes & leveling agent by pipetting in a beaker.
- ✓ Then we add glauber salt into the beaker. After that we put the sample fabric into thebeaker.
- ✓ Then place the beaker into the sample dyeing machine and dye bath set at 38°c.
- ✓ Raise the temperature up to 60° c (3°c gradient or 3°/min)
- ✓ Run the machine for 30 minutes at 60°c.
- ✓ At 30°c hold the machine and dosing soda/alkali solution according to dyeline.
- ✓ Then run the machine 60 minutes at 60°c.
- ✓ After that we drop the temperature of the sample dyeing machine and get the Sample from the machine and the sample is ready for after treatment.
- ✓ After that we give soaping at 85°c for 10 minutes. We soaped again at 90°c for10 minutes. Then we again give cold wash.

- ✓ After that we dried the sample and ironing it.

3.2.13 After treatment flow chart



3.3 BATCHING SECTION

BATCHING SECTION

3.3.1 Introduction

Batching preparation can be defined as a process where the visually inspected gray fabric is divided into different batches. It is a part of dying process & it is done to feed the dyeing machine. It is very important to make a batch with maintaining a correct length of each nozzle.

3.3.2 Objectives of batching:

1. To receive the gray fabric roll from knitting section or other source.
2. Turn the gray fabric if require.
3. To prepare batch of fabric from dyeing according to the following criteria.
4. Order sheet receive from buyer.
5. Dyeing shade (color or white, light or dark)
6. Machine capacity.
7. Type of fabric (100% cotton, PE, PC, CVC)
8. Emergency.

3.3.3 Turning Machine

Brand Name: Dong A

Sr. No: 0110055

Manu. Year: 2001

Manu. Country: Korea

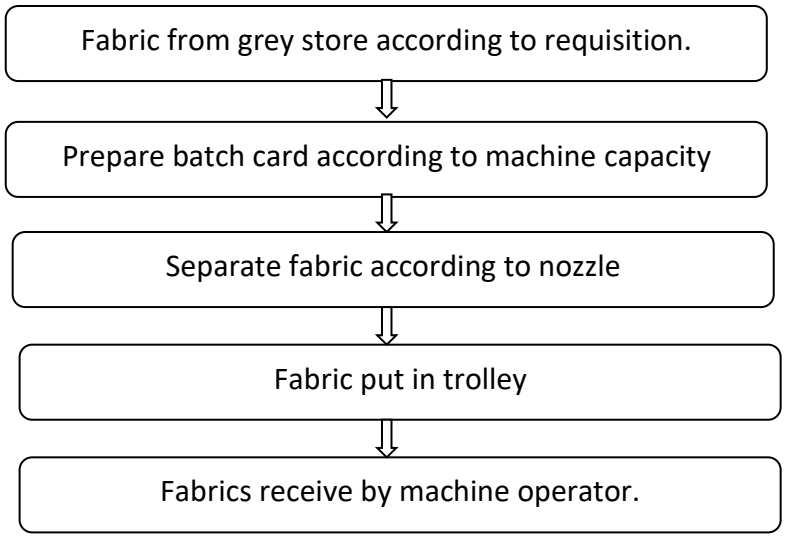
Capacity: 23 m/minSpeed: 2930 rpmPower: 7.5 kW

Voltage: 400Hertz: 50Steel bar

Capacity: 50-60 kg.

Purpose: Turn the fabric surface to avoid dyeing unevenness on face side of the fabric.

3.3.4 Flow chart of the batching section



3.3.5 Product Mix

- ✓ S/J.
- ✓ Lacoste.
- ✓ Rib.
- ✓ Finished fabric.
- ✓ Yarn dyed fabric.
- ✓ Collar & cuff.

3.3.6 Allowance consider of batching section

Fabric type	White %	Average %	Black %
S/j	10	8	8
Rib (1×1)	10	8	8
Rib (2×2)	10	8	6
Lycra cotton	14	12	10
Lycra viscose	14	14	12

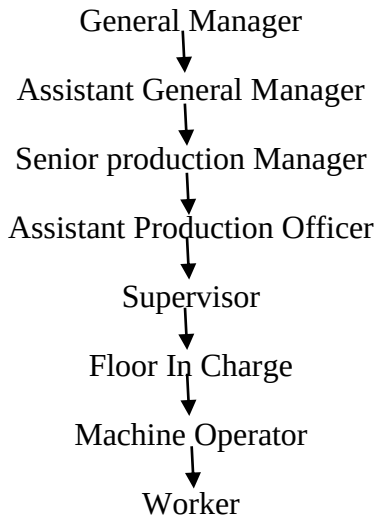
3.4 DYEING SECTION

DYEING SECTION

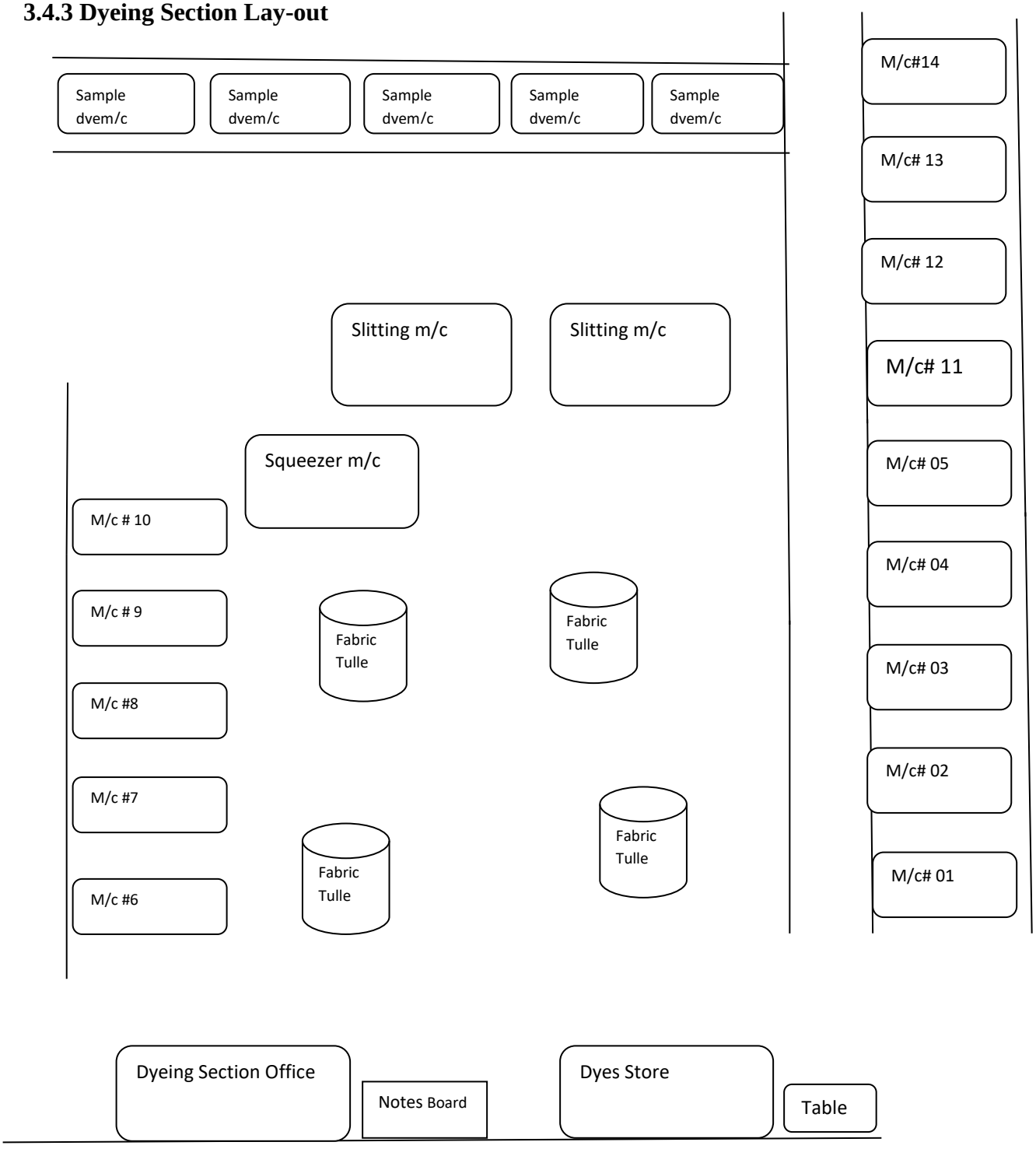
3.4.1 Introduction

The procedure of coloration Yarn, fiber or fabric with the natural or synthetics colors. By using different machine with color, chemical & auxiliaries finish this dyeing laboratories. There are use different types of dyeing process that as like as pad dyeing process, continues, semi-continues dyeing process like wise has jet-dyeing process, jigger dyeing process etc. In this dyeing section use big amounts of dye that penetrate into the fabric. In this process dye molecule inter into the fabric partial & finally produce colored fabric.

3.4.2 Organ gram



3.4.3 Dyeing Section Lay-out



3.4.4 Description Of Fabric Dyeing Floor Lay-out

Serial No:	Equipment name	Country of origin	
01	Brazzoli	Germany	
02	Brazzoli	Germany	
03	Brazzoli	Germany	
04	Brazzoli	Germany	
05	Brazzoli	Germany	
06	Brazzoli	Germany	
07	Brazzoli	Germany	
08	Brazzoli	Germany	
09	Brazzoli	Germany	
10	Brazzoli	Germany	
11	Brazzoli	Germany	
12	Brazzoli	Germany	
13	Sclavos	*Italy*	
14	Sclavos	*Italy*	
15	Sclavos	*Italy*	
16	Fong's	China	
17	Fong's	China	
18	Fong's	China	

Figure 3.4.5 Fong's sample dyeing m/c

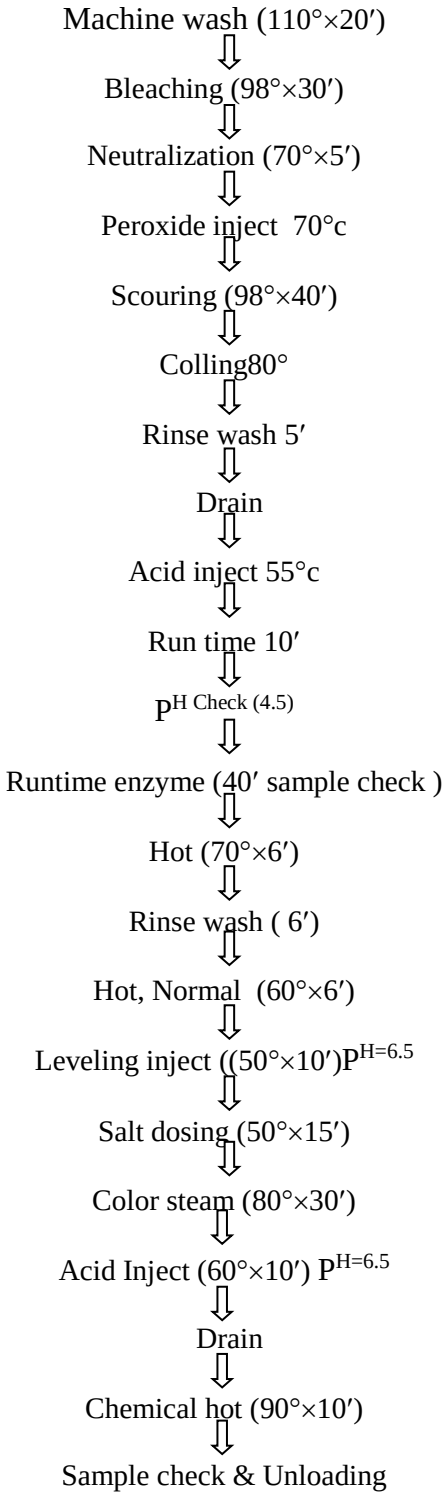
Mc Name: Fong's (sample dyeing m/c)
Ser. No **:** 27013232
M/C. No. **:** ALLFIT-60
Origin : China
Capacity : 10 Kg
Temperature : 135^0c (max.)
M: L : 1: 6-10Winch Speed: 50 m/min (max.)

Figure: 3.4.6 Sclavos dyeing m/c

M/c Name: Sclavos Dyeing m/c
Ser. No **:** 04-2A-2741
Origin : Athens, Greece
Capacity : 360 Kg
Temperature : 135^0c (max.)
Pressure : 2.6 bar (max.)
M/C V : 3×400 AC
Winch Speed: 350 m/min (max.)
Total Horse Power: 32HP

3.4.7 Flow chart of Fabric dyeing

For Light-medium shade (100% cotton) with moderate brand reactive dyes.



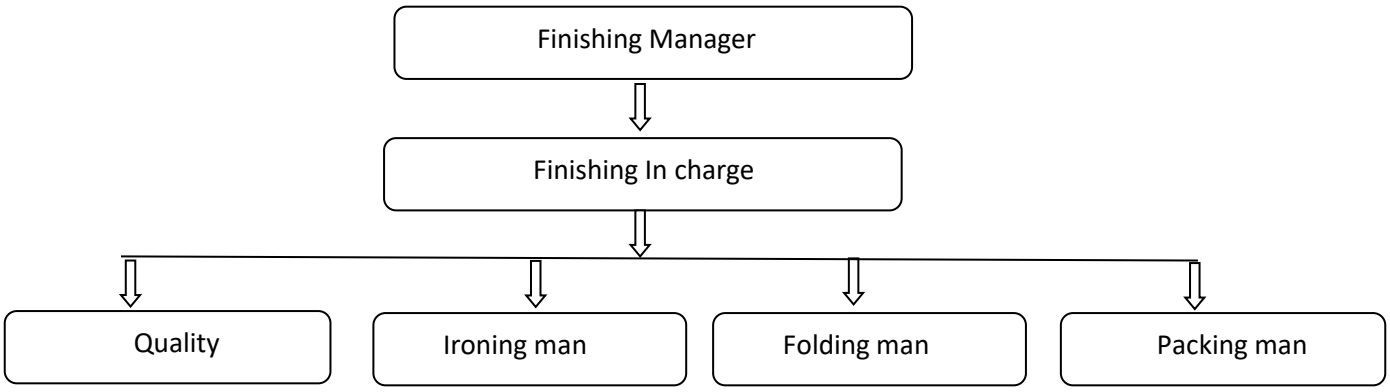
3.5 FINISHING SECTION

FINISHING SECTION

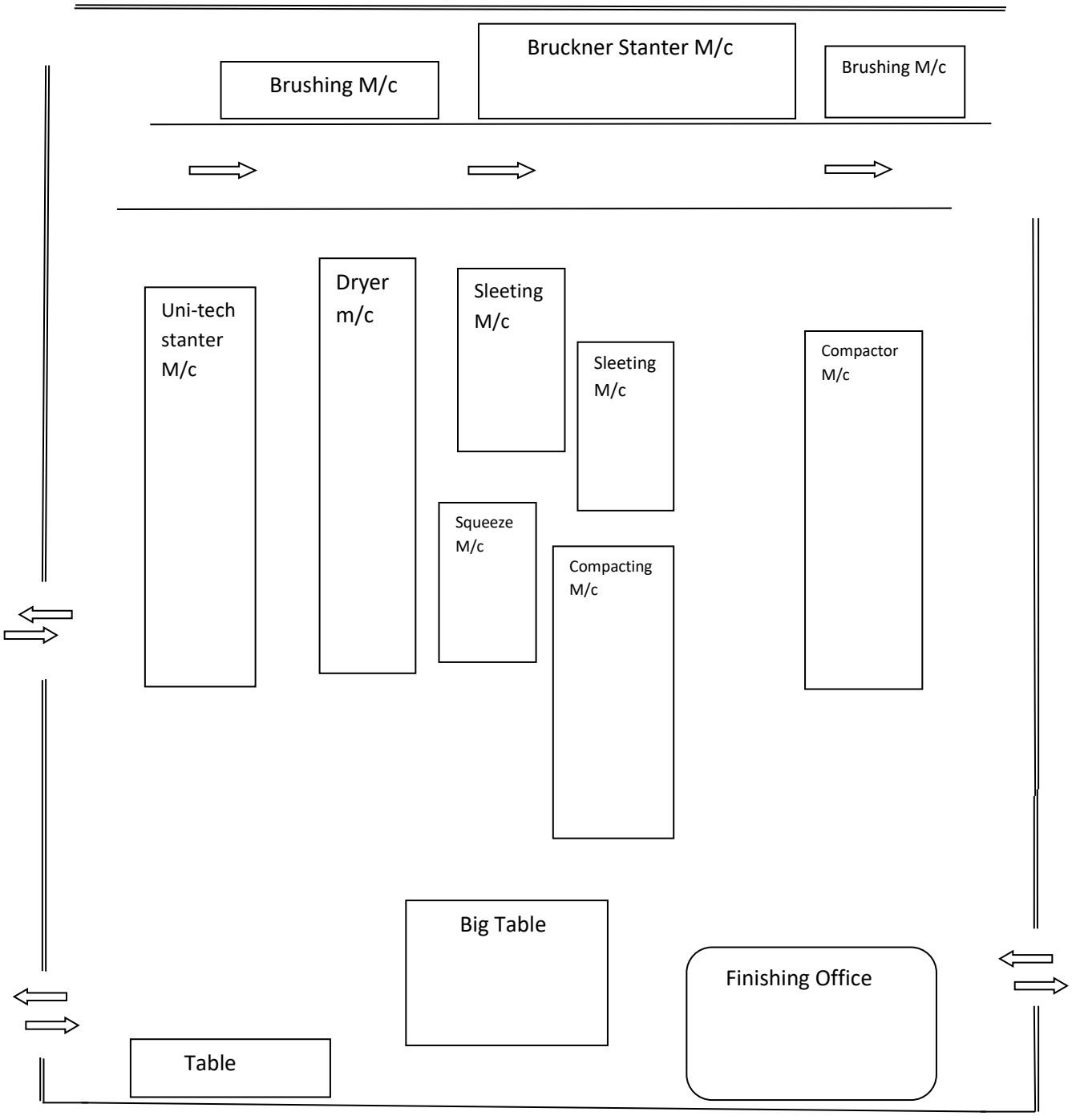
3.5.1 Introduction

Finishing is means that the creation of a market and consumer unable textile no complete after fabric production. The term finishing mainly applies to processing, folding & packing. Which is the final processed fabric that before the fabric cut for apparel or made into any component of textile. Finishing task is heat setting, napping, embossing, chelendaring& the utilization of chemical that change the character of the fabric. Finishing process improved attractiveness & make the fabric appropriate for their intend use.

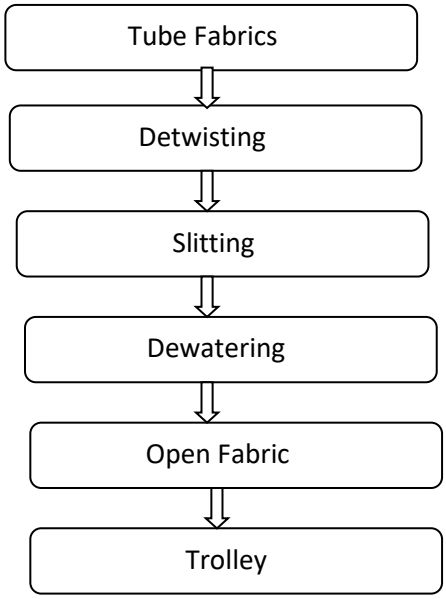
3.5.2 Organ gram



3.5.3 Finishing Section Layout



3.5.4 Process Flowchart



3.5.5 Standard Operating Procedure

- ✓ To check the machine to keep it clean.
- ✓ To check the blade.
- ✓ To check the padded pressure.
- ✓ To check the sensor.
- ✓ To check the proper movement of basket.
- ✓ To check the amount of overfeed.
- ✓ To check the activities of auto sensor.
- ✓ To check the movement of turning table.
- ✓ To check the activities of dewatering device.

Figure 3.5.6 Corino Slitting & Dewatering Machine (For Open Width Fabric)

M/c Name: **Corino Slitting**
No. of Padder: 1 Pair
Capacity: 20 kg/min.
Maximum Fabric Passing Speed: 60 m/min
Maximum Fabric Dia Capacity: 225 cm
Minimum Fabric Dia Capacity: 65 cm
Maximum Over feed (%): 40%
Minimum Over feed (%): 25%
Shade)Minimum Padder Pressure: 1 Bar (Depends on Shade)

Figure 3.5.7 Canlar Mecatronic Dryer

M/c Name:CanlarMecatronic
DryerNo. of Chamber: 4
No. of Burner: 4No. of Padder: 1
No. of Expander Roller: 5 (Motor Controlled)

No. of Free Roller: 13 (Easy Controlled) No. of Blower: 4
No. of Finger Roller: 4

Figure 3.5.8Bruckner stenter Machine

M/c Name: Bruckner stenter MachineMaximum Fabric Passing Speed: 40 m/min
Minimum Fabric Passing Speed: 5 m/min
Maximum Over feed (%): 50%
Minimum Over feed (%): -10%
Maximum Under feed (%): -3%
Minimum Under feed (%): -5%
Maximum Temperature: 190ºC
No. of Steaming Chamber: 2
No. of Temperature Chamber: 2
No. of Cooling Chamber: 1
No. of Finger Roller: 4
No. of Bianco Roller: 1

Figure 3.5.9.Lafer Compactor M/c

M/c Name: Lafer Cofactor M/c
Maximum Speed: 40 m/min
Minimum Speed: 7 m/min
Steam Pressure: 4 - 4.5
Maximum Over feed (%): 22%
Minimum Over feed (%): 18%
Pressure Type: Cylinder+ Rubber Belt

3.5.10 Fault's in finishing section

Shade change	Diameter variation
Softener mark	Slitting uneven
Crease mark	Pinning problem
Water spot	
Shrinkage	

3.6 UTILITIES SECTION

UTILITIES SECTION

3.6.1 Introduction

Production & profit both are related to each other. Excellent production always time depends on skilled trained person & good efficiency of m/c. Utilities cost can be minimize the profit cost & other cost.

3.6.2 Utilities ensure the followings

- ✓ Power supply (generator).
- ✓ Water supply by pump.
- ✓ Fuel & Gas.
- ✓ Civil work.
- ✓ Steam supply.

Power supply

Scandex Textile has two generator that always time supply power to ensure the dyeing & knitting section, so production time is not hamper. This both generator are help to minimize the production cost.

Water supply

Scandex Textile has dip tube well that always time supply water which are very important for dyeing & other section. There has water treatment plant that help to PH control water.By using this process minimize the utilities cost.

Specification of water condition

Country of origin	USA
Model no	ACC-SMR 300-2tw
Capacity	300,00GRS/Tank
Presser	100 PSI

Compressed air supplyThere has air compressor supply m/c that compressed air in the factory.

No of compressor	02
Origin	BOGE, super tonic
Country	Germany
Air presser	8 kg
Air suck	216000 m/min.

3.7 EFFLUENT TREATMENT PLANT

EFFLUENT TREATMENT PLANT

3.7.1 Introduction:

Scandex Textile. is very much concern about its effluent, for this reason they established two effluent treatment plant and they are ETP-I (capacity1200 m^3 per day) & ETP-II (capacity 3000m^3 per day). The ETP in SKFL is a biological one. Here bacterial and protozoa are the catalyst of biochemical reaction to convert the toxic material into environmental friendly gases and substances. The initial cost of biological ETP is more but it has a low running cost if control is greater.

Reaction Time

- ✓ 8-12 hr for secondary treatment
- ✓ 50 m^3/ hr for secondary treatment
- ✓ 3-4 ppm/30-35c(for proper bacterial action)
- ✓ Quantity of micro-organism 1:4
- ✓ Total capacity of ETP plant: 1200 m^3 /day + 3000 m^3/day = 4200 m^3/day.
- ✓ Sludge removes level: 800 MI/ 1/2hr f

3.7.2 Effluent Analyzing Report

Parameter	Unit	Quantity	Std. Value
P^H		7.5	6-8
COD	mg/lt	39	150-200
BOD_5	mg/lt	23	29-50
Color	APHA/Pt.Co	335	220-250
Phosphate	mg/lt	3.2	5-15
Sulphate	mg/lt	560	1000
Ammonia	mg/lt	2.50	5-10
Chloride	mg/lt	120	500-600
Nitrate	mg/lt	6.16	08-10
TSS	mg/lt	80	60-80

3.7.3 Effluent Treatment Plant Lay-out

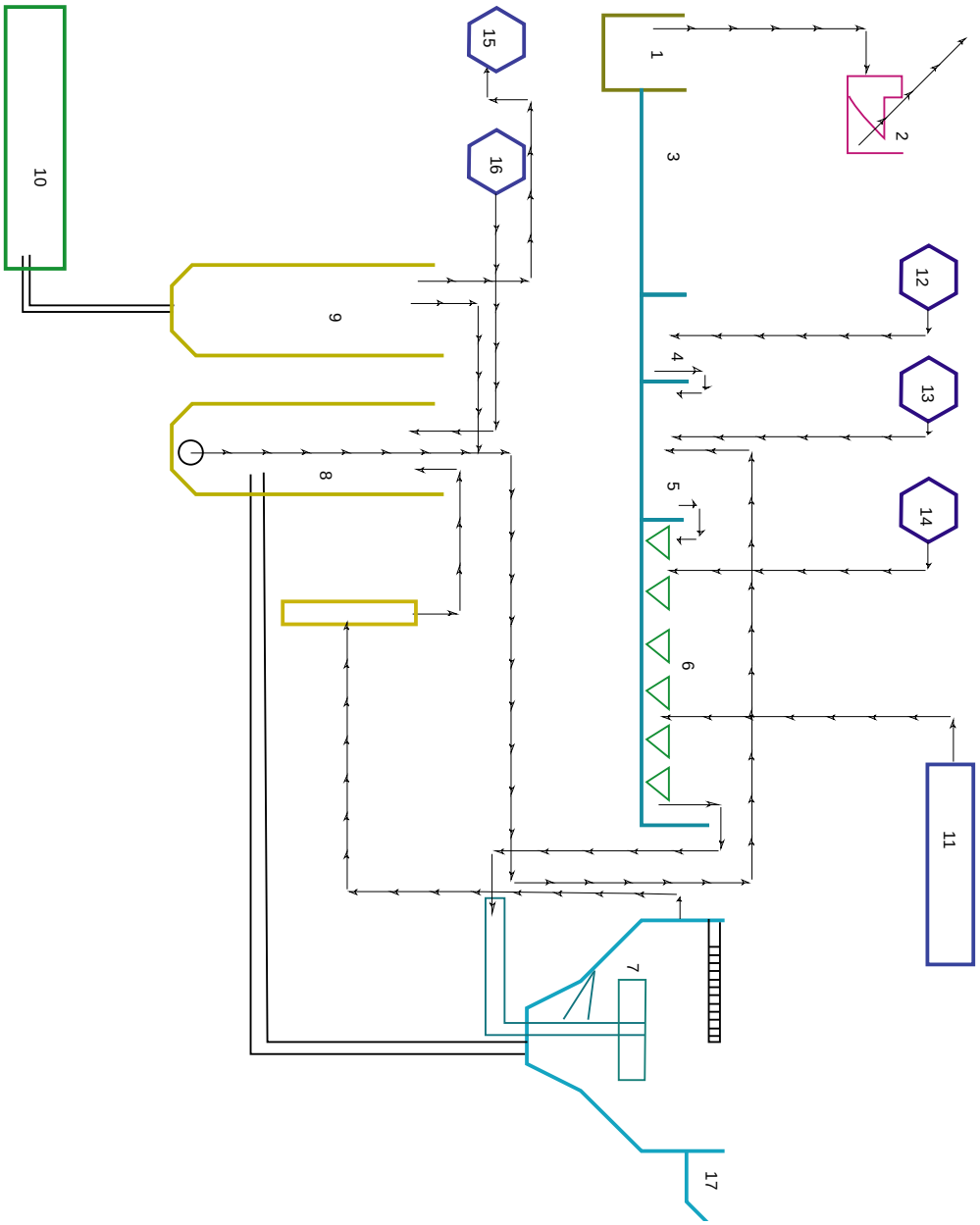


Figure **3.7.3 Effluent Treatment Plant Lay-out**

3.7.4 Equipments for ETP Laboratory

- ✓ HACH method (for measuring BOD & COD)
- ✓ BOD Incubator
- ✓ Electric Shaker
- ✓ Reflex Condensat for COD measuring
- ✓ P^H meter
- ✓ TDS meter
- ✓ Inhoff con for measuring sludge quantity
- ✓ Desiccators
- ✓ Separating funnel
- ✓ Electric Balance
- ✓ COD Reactor
- ✓ Farness;
- ✓ Portable Spectrophotometer-Meter.

3.7.5 Biochemical Reaction

Bacteria decompose the organic matter and other matters are related with oxygen by microbial action, biochemical reaction and produce gases and free radicals.

Metals are bio-chemically reacting with the enzyme and produces gases.

$$Mn + O_2 \xrightarrow{Enzyme} MnO_2$$

Organic radicals			**Gases and free radicals**
C			**CO_2**
H			**H_20**
N	**+ O_2**	$\xrightarrow{MICRO\ ORGANISM}$	**NO_3**
S			**SO_4^{2-}**
P			**PO_4^{3-}**

3.7.6 Process Water Test Report

Sl. No.	Water quality parameters	Unit	Dye house standard	Test result
1.	P^H	-	6 to 8	6.23
2.	Color	Pt.Co	5	2.0
3.	Turbidity	NTU	2	1.0
4.	Total Alkalinity as $CaCO_3$	mg/lt	150	46
5.	Chloride	mg/lt	100	8.7
6.	Total Hardness as $CaCO_3$ (TH)	mg/lt	2^oGh = (2X17.85) = 35.7 ppm	16.45
7.	Manganese (Mn)	mg/lt	0.1	Nil
8.	Iron (Fe)	mg/lt	0.1	0.02
9.	Total Dissolved Solid (TDS)	mg/lt	100 to 180	145
10.	Sulphate	mg/lt	100	1
11.	Oil & Grease	mg/lt	Nil	-
12.	Arsenic (As)	ppb	0.005	-
13.	Dissolved Silica	mg/lt	-	42.6

3. 8 MAINTENANCE

MAINTENANCE

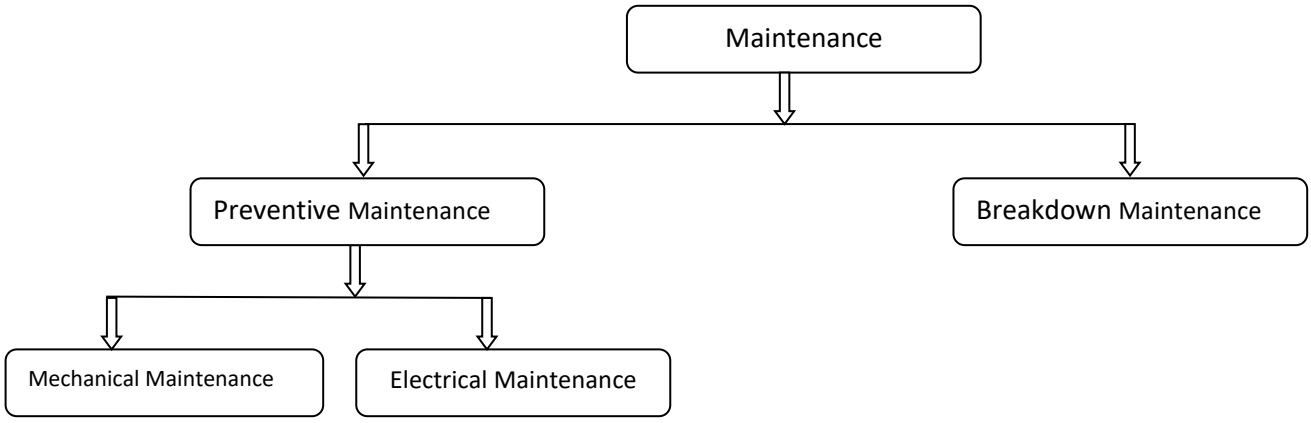
3.8.1 Introduction

Maintenance of machinery is very essential mechanical effort for achieving smooth running of different machines. Maintenance is a process by which equipment is looked after in such a way that trouble free. Services and increased machine life can be ensured and specific product quality required by the customers is sustained. On time maintenance increase m/c lifetime & ensures trouble free services.

In Scandex Ltd. following two types of maintenance are done.

- Break down maintenance
- Preventive maintenance

3.8.2 Maintenance system used in SKFL



3.8.3 Daily maintenance check list

- Check the quantity of fresh caustic soda in the caustic soda storage tank.
- Check the complete machine and the auxiliary equipment visually.
- Check whether all chains, chain wheels and drives are properly running.
- Check the soda temperature to ensure that the cooling plant works properly
- Check that all rollers are easily relatable.

3.8.4 Weekly Check

- Clean the glass electrode of pH meter.
- Check the filter net of dosing pump.
- Check the current of air pressure.
- Clean air filter of blower (monthly)

3.8.5 Every four month check list

- Calibrate the P^H meter with buffer solution, 7 & 4.
- Calibrate the blower meter.
- Grease the oxygen meter.
- Grease the scraping, bridge, bridge wheel of ball bearing.

3.8.6 Every two year check list

- Grease the spring ball bearing.
- Change the oil of sludge transfer pump.
- Change the oil of feed pump.
- Change the oil of lifting pump.
- Change the oil of sludge blower.
- Change the sensor of oxygen blower (if necessary).
- Change the electrode of pH meter (if necessary).
- Change the oil of dosing pump.
- Change the oil of scraping grease motor

CHAPTER-4
IMPACT OF INTERNSHIP

CHAPTER-4
IMPACT OF INTERNSHIP

4.1 Knitting section

During my internship period, I have learned a lot of knowledge about my topics & other topics in the industry of **"Scandex Textile Industries Ltd".** In my training period I had learned about the knitting section. Here is produce many different types of fabric. This section I also learn about different types of fabric design like as Single jersey, Rib fabric, interlock fabric, Lacoste etc. I also learned different types of specification of fla-bed, Rib, Interlock machine. This training will be vary importance for my future life.

4.2 Laboratory Section

In my internship periods, I want to try known about how to work in dyeing laboratory. In the dyeing section work is sample dyeing & prepared to dyeing shade develops. Here is used to small amount of dyes & chemical for small amount of fabric sample. In the dyeing laboratory section pipetting is the most importance for dyeing sample developer.

4.3 Dyeing Section

This industrial training was a great full opportunity for me to know about the industries & was a great supportive for my present & my future life. In the dyeing section work is fabric dyeing of big amount. In this section use big amount dyes & chemical. This industrial training I had learned about the industries environments. How to maintain the worker, how to maintain the other objects. I also learned about how to planning for new experiments. This opportunity was a better opportunity for my future life to sustain in the job sector.

4.4 Finishing Section

In my training time I also learned that the finishing section, how to finishing after dyeing fabric. In this section use different types finishing machine & chemical that helps to finished the fabric.

Finally, I told that this training period was very importance for me to know about the difference between the theoretical& practical knowledge. This training period is so much helpful for my academic theoretical knowledge that was help to me how can I asking question in the practical sector. My class was sometimes too much helpful to my training periods. I see different types fabric producing which is learn theoretical knowledge in my class room. I also learn about fabric dyeing process that is very importance my future, I was also learning finishing. In my training periods sometimes I did not recognize some process

CHAPTER-5

CONCLUSION

CHAPTER-5

CONCLUSION

Industrial training is the big opportunity for textile engineering final semester. This experience is big opportunity behind the academic courses. This training give me actual practical learn about man, machine, material, manufacturing process & global market. I will able to directly learn about raw materials & running processing condition of the machine. I was also work with the technologist & administration the time of training periods. **"Scandex Textile Industries Ltd."** Has many well planned with different sections. I will able to learn about the capable sustain condition in the factory. This opportunity isminimizing the gap between theoretical & practical knowledge & also increase about thinking level present textile technology. "Daffodil international university"give me this opportunity &**"Scandex Textile Industries Ltd."**Fulfillment to my complete industrial training. I have no experience industrials theoretical knowledge before this training.

I have completed my industrial attachment from "Scandex Textile Industries Ltd." During two month long training. I also learned about knitting, dyeing, finishing etc. I also learned about other activates from working procedure of various section.

I believe that, this industrial training will be very help full for my future life of the Textile Engineering.