Report
On
Industrial Attachment

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ACKNOWLEDGEMENT

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Special thanks goes to our supervising teacher **Md. Azharul Islam,** senior lecturer of Daffodil International University, without whose help it would not have possible to complete the training successfully.

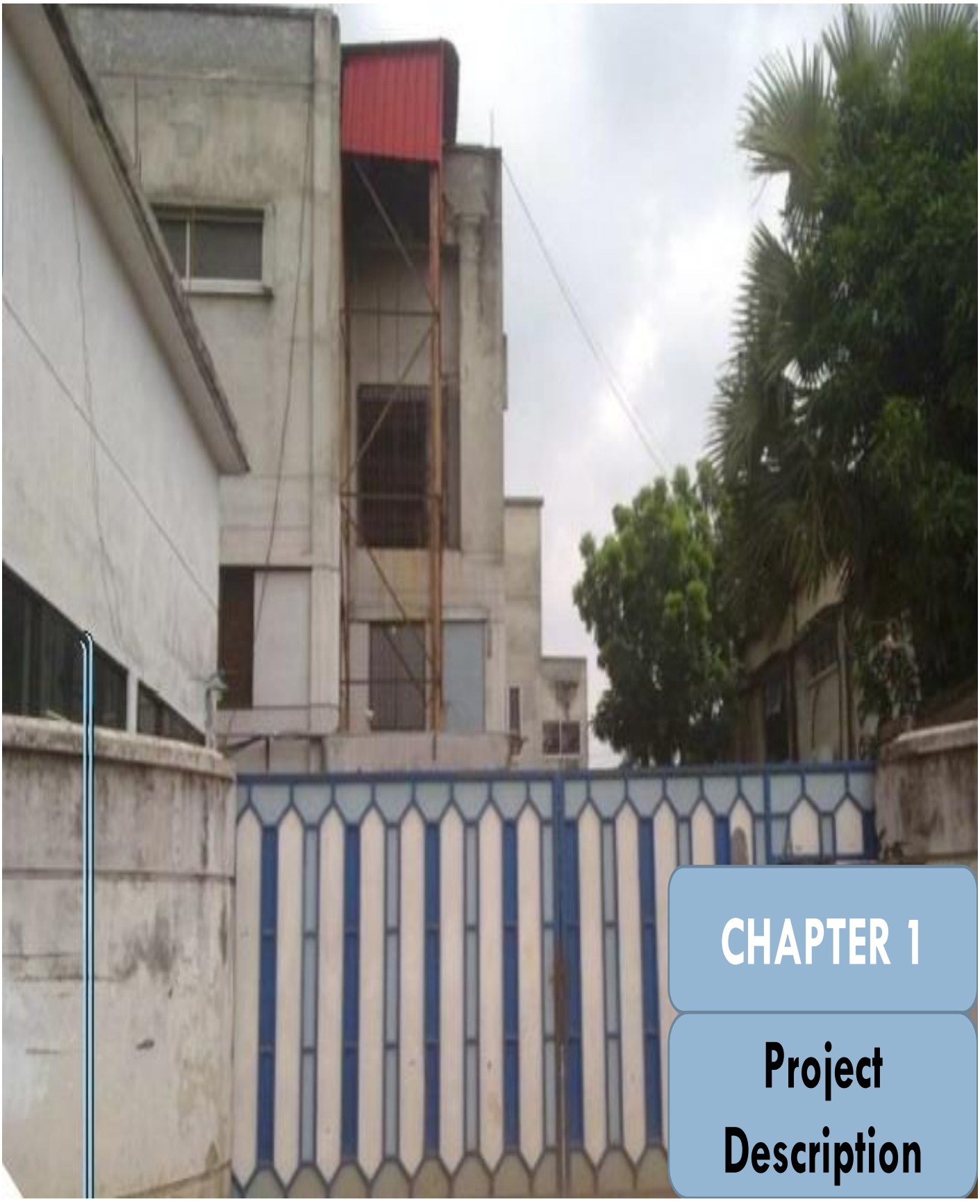
We may also take the opportunity to express our sincerest gratitude to **EVINCE TEXTILES LTD** management, and administration & personnel for their kind co- operation. Our special thanks goes to **Md. Masum Azad** (DGM, WEAVING) Our cordial thanks also to our factory supervisor **Md. Abdul Motalleb** (PM, WEAVING) and to **AbdurRahman** (PO),**SihabUddin** (PO) who provided us all the necessary information we needed.

Above all, we would like to acknowledge our deep debt to all teachers of our university and especially of Fabric Manufacturing Technology department for their kind inspiration and help, which remain as the backdrop of all our efforts.

Finally, I would like to acknowledge that I remain responsible for the inadequacies and errors, which doubtless remain.

Table of Content

……Dedicated To My Parents



CHAPTER 1

Project Description

EVINCE TEXTILES LIMITED AT A GLANCE

1. Name of the project : Evince Textiles Limited
2. Location : Shirir Chala, Bhabanipur, Gazipur.
3. Address : About 55 km north of Dhaka city.

Factory:

Village: Shirir Chala, P.O: Bhabanipur
Thana: Joydevpur, Dist.: Gazipur, Bangladesh.
Fax: 04494415800.
Tel: 88-02-8050349, 8059017

Office:
Plot-33, Section-07, Mirpur,
Dhaka -1216, Bangladesh.
Phone: (88-02) 8011227, 8013356, 8021710.
Fax: 88-02-8013504
E-mail: evince@evincebd.com

5. Board of directors:
Managing Director:
Anwar-ul Alam Chowdhury
Deputy Managing Director:
Shobnom Shehnaj.

7. Communication : The project is easily accessible by road.
8. Product name : Woven yarn dyed, 100% Cotton.
9. Product Mix :

Yarn dyed:
a. Stripe.
b. Check.

Designs - In Dobby loom:
i. Plain.
ii. Twill.
iii. Sateen.
iv. Some combination weaves which are possible in tappet.
v. Oxford. (Warp rib and weft rib).
vi. Queen's Oxford.
vii. Matt.
viii. Diamond.
ix. Diaper.

x. Herring bone.
xi. Honey comb.
xii. The design which are possible in 20 heald frames.
10. Annual production capacity: 10 million yards per year.

11. Factory area : Approx. 135094 Sq. Feet. (Including ETP)
12. Type of the factory : Horizontally integrated
13. No. of employees : Approx. 120(Officer), 1200(Worker)
14. Project cost : Approx. 3000million taka
15. Different Departments :
(a) Administration.
(b) Human Resource and Development Dept.
(c) Weaving Preparatory
(d) Weaving.
(e) Woven finishing.
(f) Yarn dyeing Dept.
(g) Store.
(h) Planning Dept.
(i) Utility Dept.
(j) Procurement
(k) Marketing

HISTORY OF EVINCE TEXTILES LIMITED

Evince Textile Limited was commissioned as a textile factory in 2003 at the Gazipur district of Bangladesh with a goal of producing world-class fabric in Bangladesh. Evince is a Private Limited Company, which is recognized as one of the pioneers in the manufacture of garments in Bangladesh with fully-integrated production chain. Evince is producing almost 100% cotton woven fabrics, using the most modern equipment and technology available, and in compliance with the highest quality standards. Currently this factory is equipped to produce a half million of yards a month of a wide range of fabrics. 100% cotton yarn dyed plain and structured/dobby shirting fabrics. The EVINCE Group stated objective is to produce to the most exacting standards high quality Finest Fabrics for using medium & upgrade woven garments. We will cater to the high quality requirements for the Ready Made Garments (RMG) Sector and supply cotton yarn dyed fabrics of a standard not available elsewhere in Bangladesh. We will closely work with international clients to be constantly up-to-date with ever changing requirements. It is our aim to excel and grow. In fact we have already commenced our expansion to Trefoil the capacity.

CHAPTER 2

ADMINISTRATION

Administration

Administration is a common part of any organization. It determines how the organization will conduct. By administration any industry makes their rules. It provides safety of the organization as well as then employee of the organization. In evince textile there is a administration department. In evince textile this department works for the following areas:

Admin & Accounts

Admin & Transportation

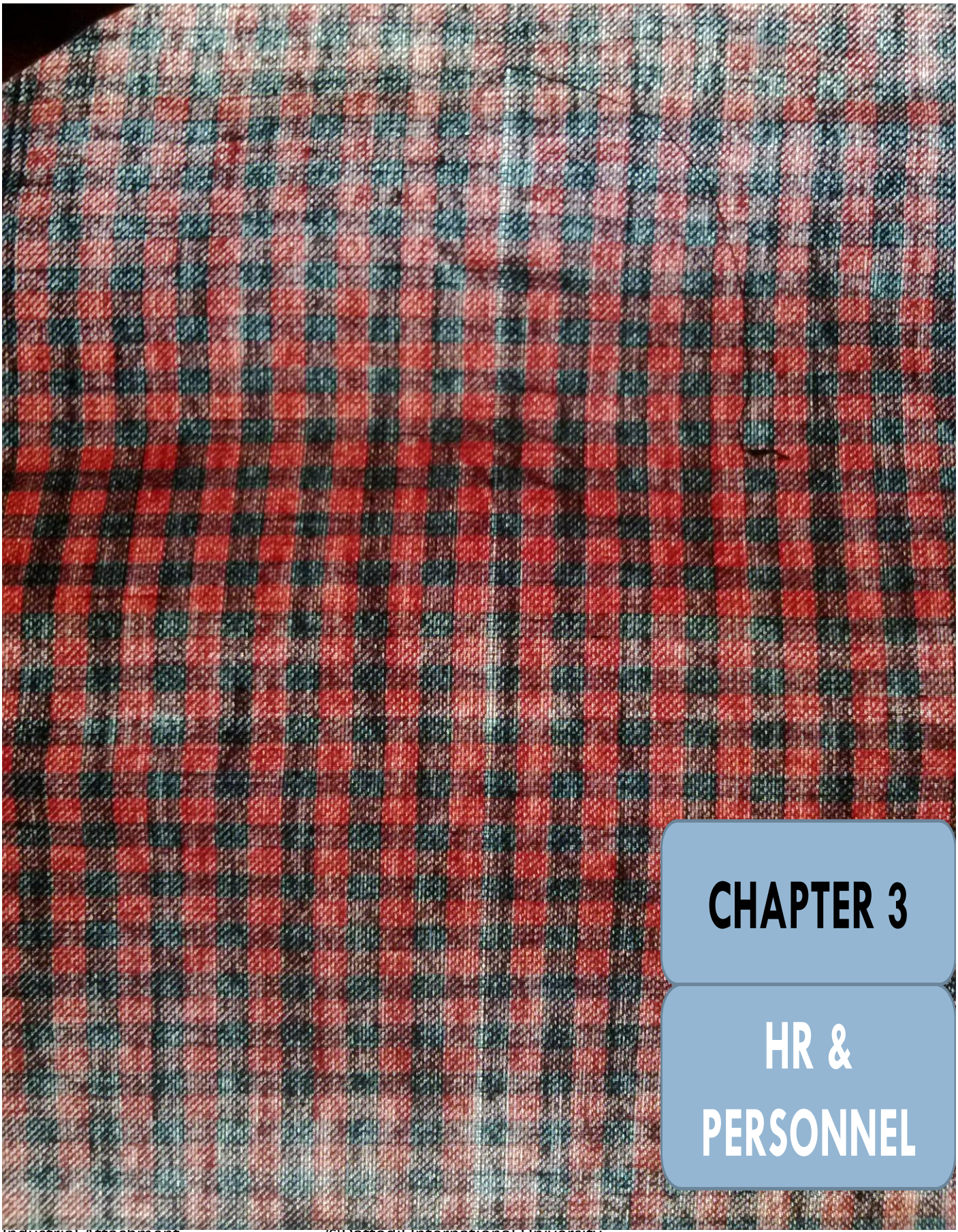
Admin & Security

Admin & Construction

Admin & Procurement

Admin & Housekeeping

Admin & Cleaning



CHAPTER 3

HR & PERSONNEL

HR & PERSONNEL

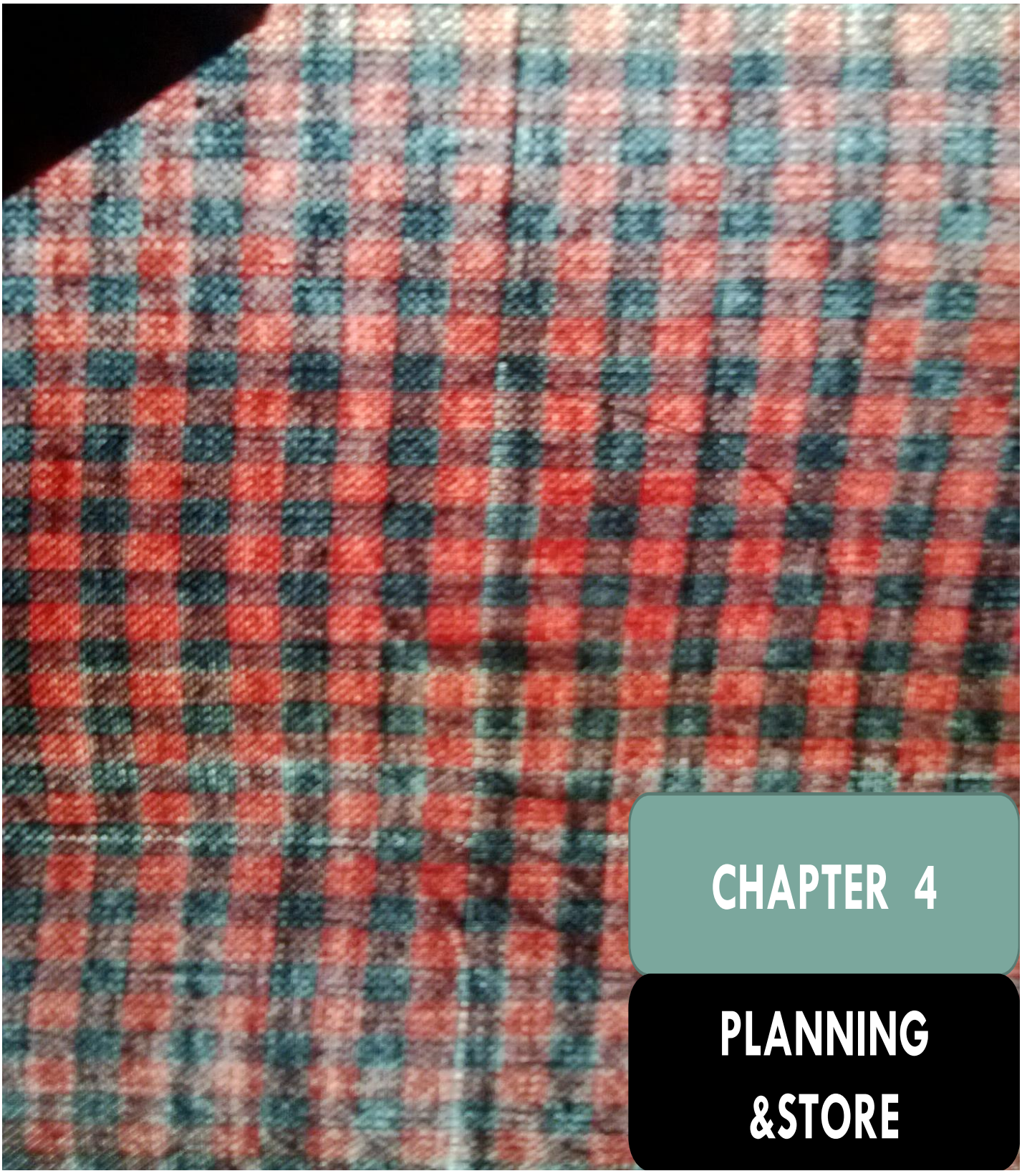
The process of liring and developing employees so that they become more valuable to the organization. Human resource management includes conducting job analysis, planning personal needs, recruiting, the right people for the job, orienting and training, managing wages and salaries, providing benefits and incentives, evaluating performance resolving dispute and communicating with all employees at all level.

There are three division HR & PERSONNEL

Recruitment

Compliance

Payroll


CHAPTER 4
PLANNING
&STORE

Planning & Store

In evince textile there is planning and store department. A first marketing department collects order from buyers and sent to planning department. Then planning department plan to produce the fabric. They also find out the amount of yarn required to produce a fabric according to buyer requirement. The main work for planning department is to maintain the production (at a certain time that is given by buyer). Generally time durability for bulk production is 40-45 days.

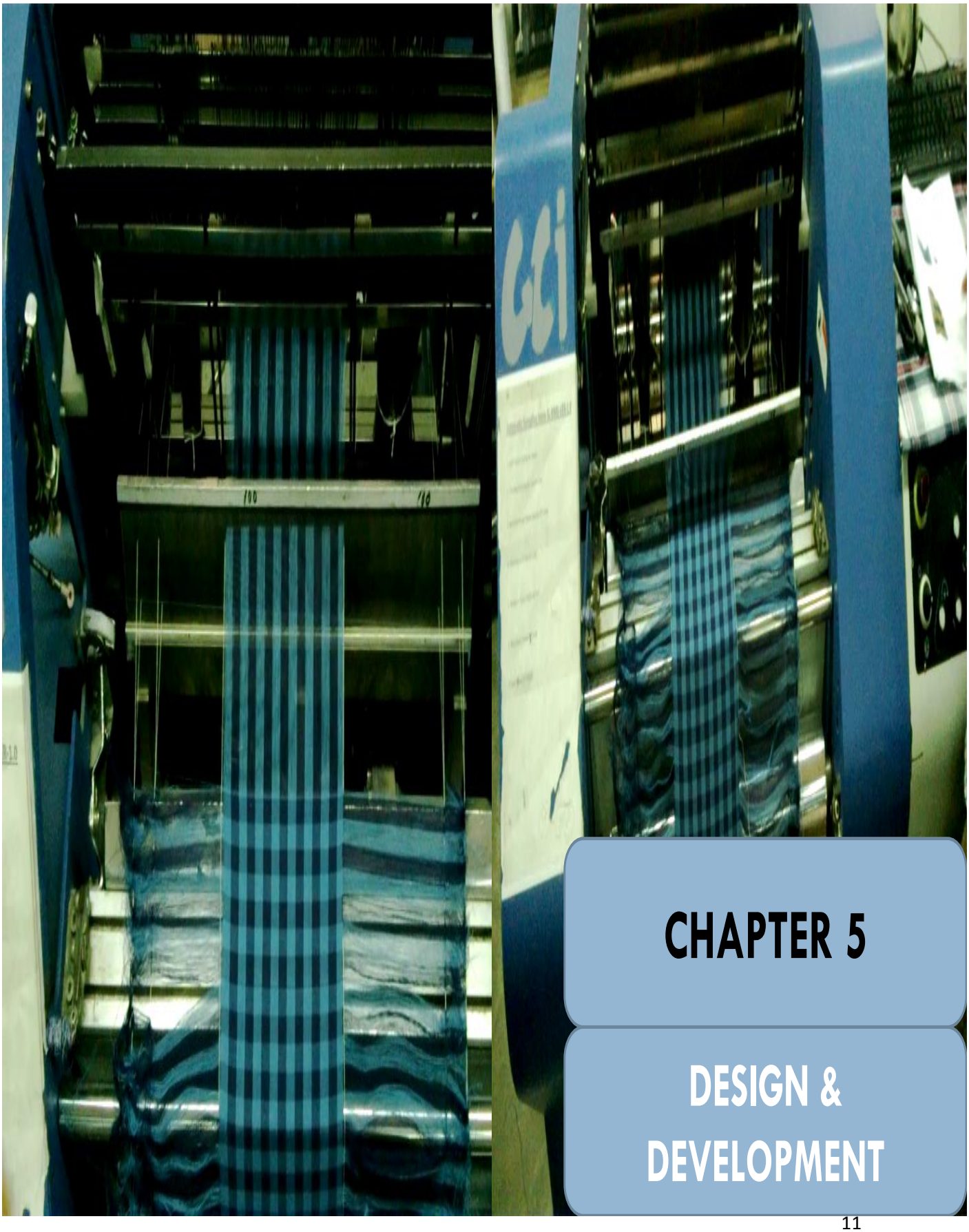
Standard time for production in different section:

Department Name	Time
Main plan	8 days
Warping	3 days
Sizing	4 days
Looming	18 days
Finishing	4 days

If buyer gives swatch then the swatch is analysisin R&D department. R&D department find out a job sheet and gives back to planning department and planning department distribute the job sheet to all department for production. At first yarn store issue yarn according to the demand to the winding section.

Capacity of yarn store: 170 ton

Capacity of fabric store: 3 lack yards



CHAPTER 5

DESIGN & DEVELOPMENT

DESIGN & DEVELOPMENT

There is a design & development department in evince textile.First of all design and development department get a swatch from planning department. Then this department analysis various things of the swatch. They find out:

- Fabric Type
- Fabric Construction
- Fabric composition
- Yarn Count
- Finish Type
- Dye Type

Then they make a sample following the construction of buyer swatch. There is a CCI hand loom in evince textile where they make sample for buyer. When they find out all things then they find out total yarn need to make a fabric according to buyer requirement.

Calculation of Design and Development department:

Suppose construction of a fabric $= \frac{120\times80}{40\times40} \times 58/59''$

Buyer quantity =1000 yds

At first have to find out repeat of the fabric then warp pattern and weft pattern of the repeat.

Warp Pattern		**Weft Pattern**	
White	2	Red	2
Black	1	Navy Blue	9
White	2	Black	8
Black	1	White	2
White	12	Black	2
Black	1	White	13
White	2	Black	2
Black	1	White	2
White	2	Black	8
Black	13	Navy Blue	10
Navy Blue	12	White	2
Yellow	2	Navy Blue	10

Navy Blue	12	Black	8
Black	13	White	12
White	13	Black	2
Black	1	White	12
White	2	Black	8
Black	1	Navy Blue	9
White	13		
Black	12		
Green	12		
Red	2		

Then have to find out total warp and weft of different color in a repeat:

Warp	
Color Name	Totalnumber
White	
black	3
Navy Blue	1
Yellow	1
Red	3
Green	2

Weft	
Color Name	Total Number
White	1
black	3
Navy Blue	1
Red	3

Then they find out:

- Grey Quantity
- Warp Length
- Reed Count
- Total Ends
- Reed Width
- Grey Pick

Grey Quantity:

Here say,

Total wastage (crimp) to make a make a fabric =7%

So Grey Quantity= (required quantity+wastage)

=1000+7%+extra 30 yds

=1100

Warp Length:

Here total wastage of yarn=12.5 %

So in 100 mtr yarn wastage is 12.5

So in 1 mtr yarn wastage is $= \frac{12.5}{100}$

So in 1000 mtr yarn wastage is$= \frac{12.5 \times 1000}{100}$

=125 mtr

So warp length =1000+125=1125mtr

Total Ends:

=(EPI×Fabric Width)+(selvedge×2)

=(120×59)+(16× 2)

=7112

Reed Width:

$= \frac{\text{Total Ends}}{\text{Reed Count}}$

$= \frac{7112}{110}$

=64.65

Grey pick:

Grey pick depends on shrinkage%. After finishing shrinkage increase as a result grey pic has to be given lower than original PPI in construction. In evince textiles the use PPI 4% less. That means if in construction buyer wants 80 ppi they use 75 to 76 ppi.

Gm/m:

$$= \frac{\text{Total Ends}}{\text{warp count} \times 840}$$

$$= \frac{7112}{40 \times 840}$$

$$= \frac{7112 \text{ lb}}{40 \times 840 \text{ yds}}$$

=0.211 lb/m

=0.211 × 1.09 lb/m

=0.2307 lb/m

=0.2307×456.59 gm/m

=105.34 gm//m

There is a sample development room under design and development section. In this room the develop design of fabric according to buyer requirement.

OPERATION PROCEDURE

In EVINCE TEXTILE LTD there is a sample development section. Previously the samples are developed in the hand loom but now they use CCI for sample development. This section consists of CCI Sizing machine, CCI Warping machine & CCI Weaving machine from CCI TECHINC, TAIWAN. It has capacity of producing 8 samples per day.When EVINCE gets a new order without any swatch, then they prepare a CAD & sends it to thesample development section. There a small size of sample is prepared. If the sample isapproved by byer then the planning department took necessary step for bulk production.

CCI SIZING MACHINE

Fig: CCI Sizing Machine

Technical Information:
Model SW550
Working width 20 inches maximum
Warping length 3.6 meter
Maximum ends
can be used2400
Maximum color
can be used 24
Color change Shifting movements controlled by computer.
Yarn breaks Equipped with yarn breaking detecting device, machine stops when yarn breaks.
Controller PC based controlling system
Designing
software
(I) CCI – Sedit2
(II) Pretronic
Air consumption 10 Liter/min. Air pressure 6-9 KPa
Power source 220V, Single Phase, 50/60 Hz
Maximum power 2KW

Model	SL8900S
Weaving width	20 inches maximum
Speed	45 PPM maximum
Weft selector	Maximum 8 colors
Fabric take-up	Electronically controlled. Weft density can be changed freely with in the same weave.
Warp let-off	Positive electronically controlled.
Shedding	Computer controlled. Maximum 20 heald frames driven pneumatically by air cylinders (1^{st} & 2^{nd} heald frames are for leno & selvedges).
Draw-in	Heald frames can be separated from loom for healds & reed draw-in.
Weft insertion	Single rapier weft insertion driven by servo-motor. Speed could be controlled independently through the computer.
Beat-up	Computer controlled driven independently by servo-motor. Suitable for heavy fabric.
Weft breaks	Mechanical weft break detecting device. Loom stops when weft breaks.
Warp breaks	Photo-electric warp break detecting device. Loom stops when warp breaks.
Controller	PC based controlling system
Designing software	(I) CCI – Sedit2 (II) Dobbytronic
Air consumption	580 Liter/min. Air pressure 6-9 KPa
Power source	220V, Single Phase, 50/60 Hz
Maximum power	2KW

Process sequence of CCI Weaving Machine –

Inserting
↓
Selecting
↓
Shedding
↓
Beating

MAJOR DEPARTMENTS IN EVINCE

1. Winding.

2. Warping.

3. Sizing.

4. Drawing, Denting.

5. Weaving.

6. Inspection.

7. Finishing.

Winding:

In fabric manufacturing (weaving) process this is the first stage where rewinding of supplied yarn is done on to a desired package to make suitable for the use in the next process.

Types of winding:

1. Soft winding (before dyeing process)
2. Hard winding (after dyeing process)

CHAPTER 6

SOFT WINDING

SOFT WINDING

Where the grey yarn is wound on to a special type of metallic bobbin and the package (spool) is made softer and bulkier to make it suitable for dye penetration in the (package) dyeing machine. In soft winding process here a special type of still bobbin use. It is known as spool. In spool there is special type of hole in present on the surface of the bobbin as a result in dying process dye materials can easily penetrate into yarn surface so even shade can found after dyeing.

Fig: Steel Bobbin(spool)

ORGANOGRAM

The organogram of this section is given below:

Section in charge

↓

Supervisor

↓

Operator

↓

Assistant Operator

↓

Helper

↓

Cleaner

MAN POWER

OPERATION FLOW CHART

Yarn received by store for a specific order

↓

Requisition given from soft winding section

↓

Received the yarn

↓

Winding

↓

Checking (Dia & per package weight)

↓

Stop winding

↓

Quality assurance

↓

Route card making

↓

Delivery for Dyeing

Here density of soft winding package hate to done according to the distance between spindle to spindle in dyeing batch. If dia of package is too much then there is a possible to attach with each other package in dyeing batch and uneven shade will occur.

FINDING OUT PACKAGE DENSITY

For 40/1:

Package wt. from spinning mill= 1.96 Kg

Only paper cone wt. = 0.05035 Kg

So, only wt. of yarn on package = (1.96 – 0.05035)

= 1.90968 Kg

= 1909.68 gm

Now,

Package wt. after S/W = 1.30 Kg

Only steel bobbin wt. = 0.24 Kg

So, only wt. of yarn on steel bobbin = (1.30 – 0.24) Kg

= 1.06 Kg

= 1060 gm

Package dia = 17.7+ 17.6 /2 = 17.65 cm So, radius, r = 17.65/2 = 8.825 cm Height, h =

(14.2+14.3)/2 = 14.25 cm Volume, v = πr2 h

= 3.14 × (8.825) 2 × 14.25

=3486.544 cc

So, package density = 1060/3486.544 gm/cc

=0.304 gm/cc

For 50/1:

Package wt. from spinning mill = 1.94 Kg

Only paper cone wt. = 0.05032 Kg

So, only wt. of yarn on package = (1.94 – 0.05032) Kg

= 1.88968 Kg

=1889.68 gm

Now,

Package wt. after S/W = 1.36 Kg

Only steel bobbin wt. = 0.24 Kg

So, only wt. of yarn on steel bobbin = (1.36 – 0.24) Kg

= 1.12 Kg

= 1120 gm

Package dia = 17.9+ 17.8/2 = 17.85 cm So, radius, r = 17.85/2 = 8.925 cm Height, h =

(14.2+14.2)/2 = 14.2 cm Volume, v = πr2 h

= 3.14 × (8.925) 2 × 14.2

=3553.495 cc

So, package density = 1120/3553.495 gm/cc

=0.315 gm/cc

For 60/1:

Package wt. from spinning mill = 1.94 Kg

Only paper cone wt. = 0.05032 Kg

So, only wt. of yarn on package = (1.94 – 0.05032) Kg

= 1.88968 Kg

=1889.68 gm

Now,

Package wt. after S/W = 1.266 Kg

Only steel bobbin wt. = 0.23 Kg

So, only wt. of yarn on steel bobbin = (1.266 – 0.23) Kg = 1.036 Kg

= 1036 gm

Package dia = 17.4+ 17.7/2 = 17.55 cm So,

radius, r = 17.55/2 = 8.775 cm

Height, h =(14.1+14.2)/2 = 14.15 cm

Volume, v = πr2

h = 3.14 × (8.775) 2 × 14.15=3422.96 cc

So, package density = 1036/3422.96 gm/cc = 0.302 gm/cc

So, we can conclude that Soft Winding package density varies between 0.300.35.

PRODUCTION CALCULATION

Delivery Speed = 600 m/min

Total no. of head = 324

Efficiency = 90%

Time = 1 day

For 40/1:

Production/day = (600×324×60×24×0.9×1.09)/(840×40×2.2046) Kg/day

= 3707.308 Kg/day.

For 50/1:

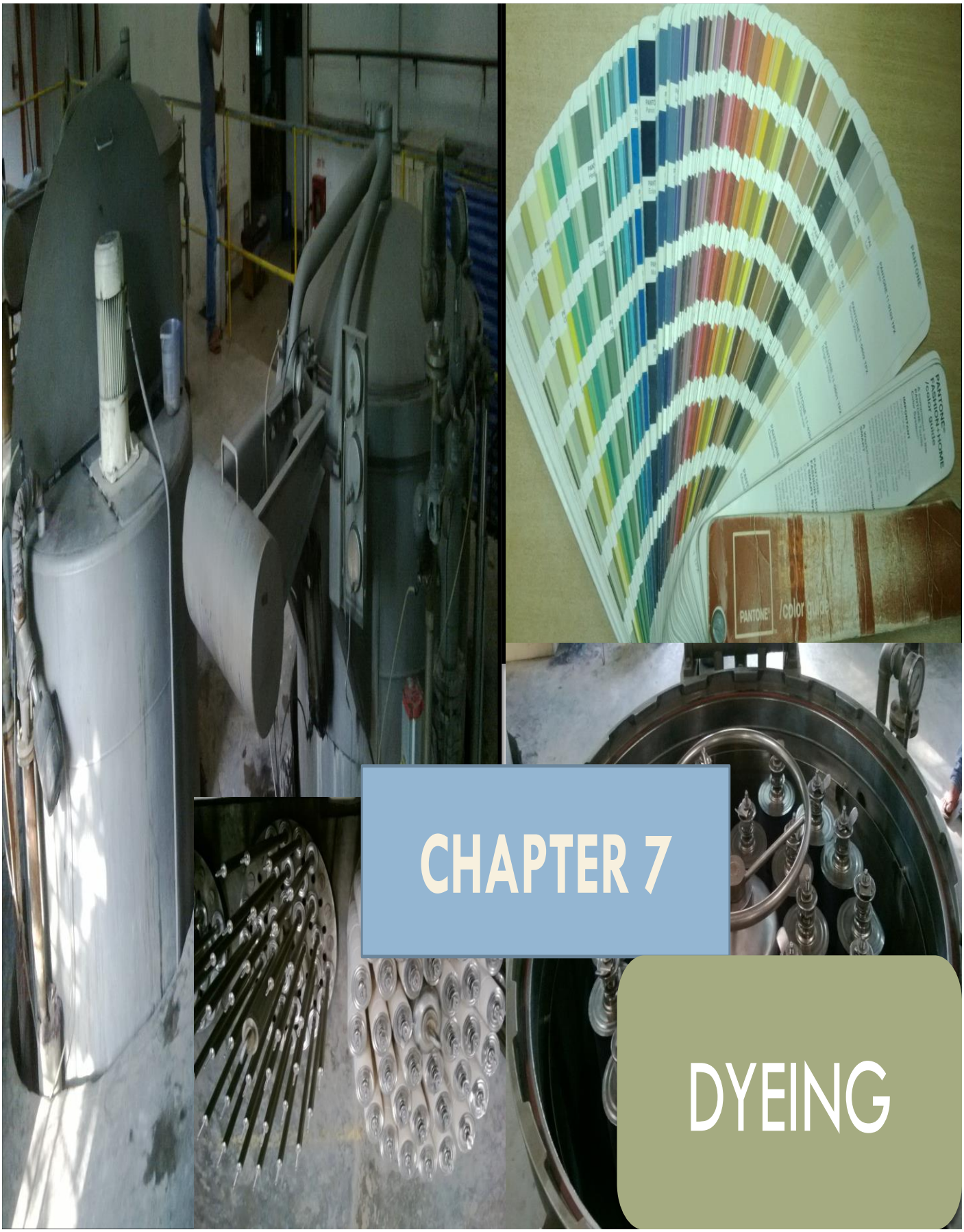
Production/day = (600×324×60×24×0.9×1.09)/(840×50×2.2046) Kg/day

= 2965.85 Kg/day.

For 60/1:

Production/day = (600×324×60×24×0.9×1.09)/(840×60×2.2046) Kg/day

= 2471.55 Kg/day.



CHAPTER 7

DYEING

Yarn Dyeing

Objective:

To dye grey yarn & to produce check and stripe fabric.

Definition of Dyeing:

Dyeing is the process of adding color to textile products like fibers, yarns, and fabrics. Dyeing is normally done in a special solution containing dyes and particular chemical material. After dyeing, dye molecules have uncut chemical bond with fiber molecules. The temperature and time controlling are two key factors in dyeing. There are mainly two classes of dye, natural and man-made.

The primary source of dye, historically, has generally been nature, with the dyes being extracted from animals or plants. Since the mid-18th century, however, humans have produced artificial dyes to achieve a broader range of colors and to render the dyes more stable to resist washing and general use. Different classes of dyes are used for different types of fiber and at different stages of the textile production process, from loose fibers through yarn and cloth to completed garments. Dying can be done in different way such as fibre dyeing, yarn dyeing, fabric dyeing, garments dyeing etc.

Yarn dyeing process is used in EVINCE TEXTILES because they produce check & stripe fabrics are produced.

Yarn Dyeing:

When dyeing is done after the fiber has been spun into yarn, it is called Yarn dyeing. There are many forms of yarn dyeing- Skein (Hank) Dyeing, Package Dyeing, Warp-beam Dyeing,and Space Dyeing.

Yarn dyeing is slightly difference from woven or knit dyeing. Yarns are dyed in package form or hank form by yarn dyeing process. Dyeing process can be vary depending on the individual procedure of a textile engineer or a dyeing master. Dyed yarns are used for making stripe knit or woven fabrics or solid dyed yarn fabric or in sweater manufacturing. Yarn dyeing starts from soft winding to packaging.

Here yarn is dyed as package form batch wise.

Production Parameter for Yarn Dyeing:

- pH
- Time
- Pressure
- Liquor ratio
- Temperature
- Machine Capacity
- Dye & Chemical Quality
- Chemical concentration
- Dye category or Dye type
- Machine running efficiency
- Dye percentage/ Shade percentage
- Yarn composition (i.e. fiber used to make the yarn)

DYEING PROCEDURE

Pretreatment

(Scouring & Bleaching)

↓

Dyeing

↓

After treatment

(Wash-off)

↓

Finishing

BASIC YARN DYEING SEQUENCE:

Soft Winding

↓

Batching

↓

Dyeing

↓

Hydro extractor

↓

Dryer (R.F. Dryer)

↓

Hard Winding

YARN DYEING SEQUENCE FOLLOWED BY EVINCE:

Soft Winding

↓

Batching

↓

Dyeing (pretreatment, dyeing, after treatment)

↓

Drying (Rapid Dryer)

↓

Hard Winding

Full dyeing process:

i) Pretreatment
ii) Dyeing
iii) After treatment

i) Pretreatment(Bleaching process):

Detergent (JET)

↓

Wetting agent (MSD)

↓

Sequestering agent (MSD)

↓

Stabilizer (FPL)

↓

Caustic Soda

↓

Hydrogen Peroxide (H_2O_2)

Above chemicals are added at dye bath with appropriate water and it is run 30min at 100^0 C temp. Than the water is drained.

For example: For 250kg batch yarn dyeing 1600L water is taken and required chemicals are added to the water and then it is run 30min at 100^0C temp.

After completing bleaching process neutralization is done by using acetic acid or core neutralization. It is run 10min at 60^0C. Bactosol SAP is used to remove H_2O_2.

ii) **Dyeing (Cotton Dyeing Process):**

Salt(PH 6-7)

↓

Leveling agent (Osimol STB)

[It is run 20min at 60^0C temp.]

↓

Color (Dye)

[The dye is mixing at 60^0 C; 20min dozing is done to the dye bath and is run 20min at 60^0C temp. Reactive dye is used to dye cotton yarn.]

↓

Manually leveling check

↓

Alkali (PH 10.5-11)

[At 60^0C temp. 30min dozing is done and than 30-45 min is run at 600C.]

↓

Sample (If OK)

↓

Drain

↓

Rinse

[5-10 min at normal temp.]

ii) After treatment (Soaping Process):

Acetic acid

[It is used to remove alkali & it is run 10min at 40^0C]

↓

Soaping (Avosperse AD)

[For dark shade: - At 90^0C temp 10min run.]

[For light shade: - At 80^0C temp 10min run.]

↓

Rinse

[10min run at normal temp.]

↓

Sample (If OK)

↓

Drain

↓

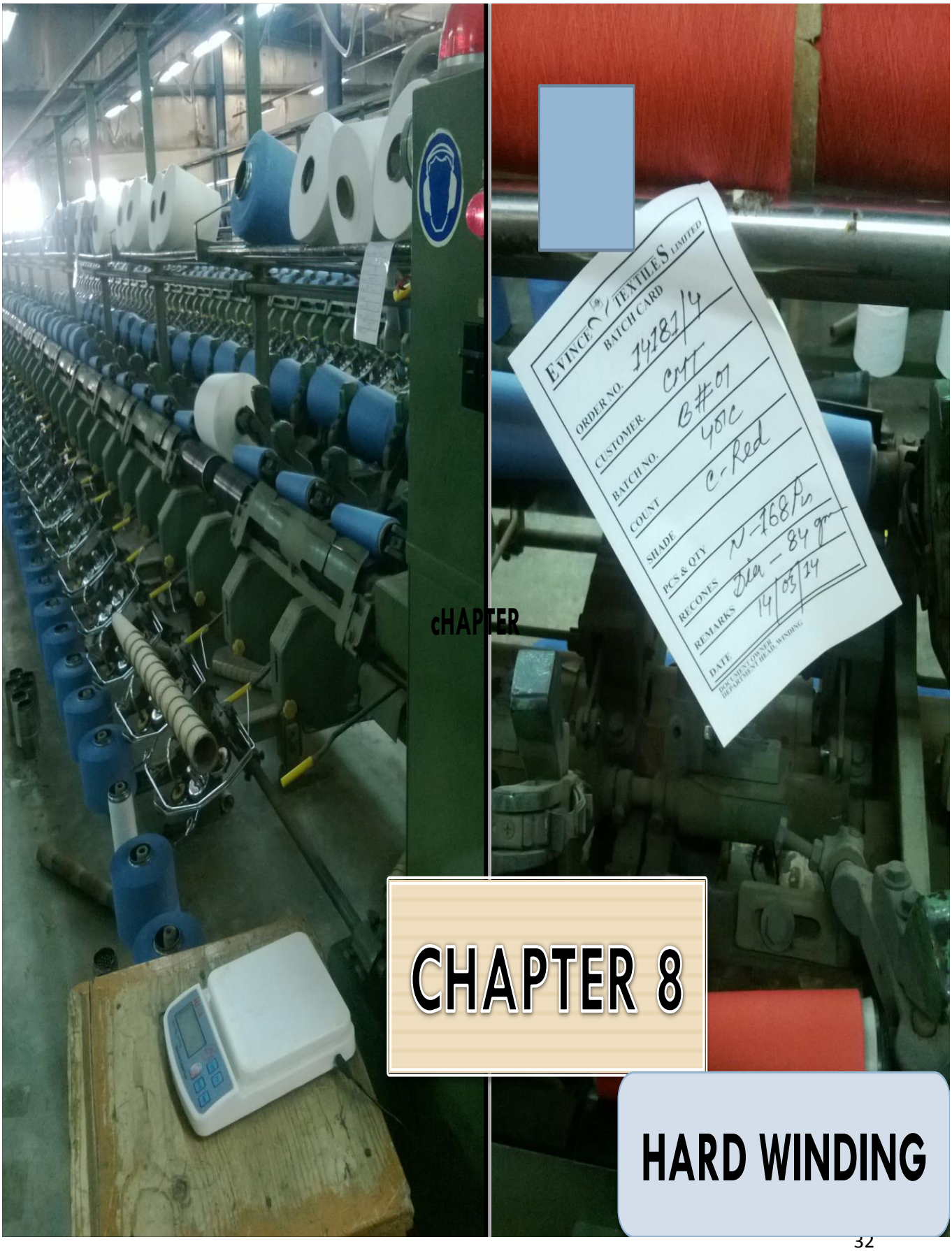
Neutralization

[Neutralization is done to control PH at range of 5-6.]

↓

Finishing

[Katamin BW is used as finishing agent]



cHAPTER

CHAPTER 8

HARD WINDING

HARD WINDING

Where the dyed yarn from dyeing machine is converted into spool to paper cone, to make the yarn easily be fed to the sectional warping machine.

ORGANOGRAM

Section in charge
↓
Assistant operator
↓
Helper
↓
Cleaner

FLOW CHART

Route card “ok” by Quality Control Department
↓
Checking by winding supervisor
↓
Start Hard Winding
↓
Measuring Weight

SPARE ITEM TYPES

1. Readymade / purchase
2. Fabrication tool in work shop / other side
3. Import item

QUALITY CONTROL IN WINDING SECTION

The following quality is maintained in preparatory stage:

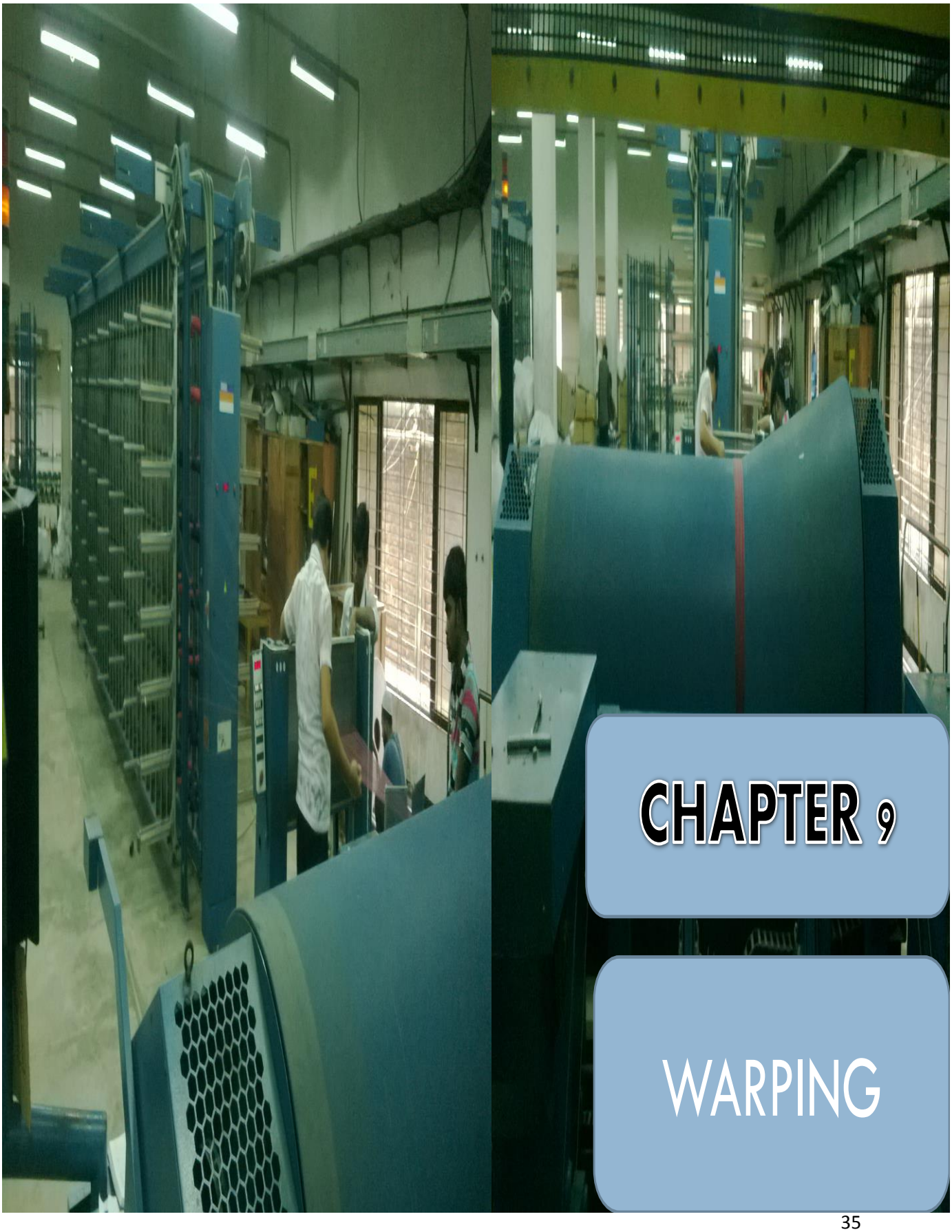
Shade matching:
The dyed yarn compared with lab drip sample or swatch card.

Level Checking:
During package dyeing dyes chemical enter in to package by pressure. So there is a possibility to differ level in inner and outer side. It is checked and allow up to (5 -6) %

Fastness:
Water and color fastness is checked.

Strength:
CSP, tenacity, CV% of tenacity, elongation are tested.

Package hardness:
Soft wound package is checked by hand. If it is hard, improper dyeing will occur. The hard wound package also is checked. If it is less hard or too hard it will create problem in the subsequent process.



CHAPTER 9

WARPING

WARPING

Definition of Warping:

The parallel winding of warp ends from many winding packages (cone, cheese) on to a common package (warp beam) is called warping.

Types of Warping:

1. Sectional or Pattern Warping(conical drum or dresser warping).
2. High speed/ Beam/ Direct Warping(preparatory beam warping).

In EVINCE TEXTILE sectional warping is used as they produce stripe and check fabric. Now we discuss about sectional warping.

Sectional or Pattern Warping:

In sectional warping equal length of yarn is first wound in small sections or sheets on a drum.

Then from the drum it is transferred to the beam. By this process we directly get the weavers.

beam. This is a two stage method and is used for making fancy fabrics

CAUSES OF YARN BREAKAGE IN WARPING:

1.Weak yarn.
2. Sloughing off.
3. Over lapping.
4. Knots/ bad splice.
5. Slubs.
6. Loose yarn.
7. Pig tail.
8. Cut yarn.
9. Bad tip cone.

10. Short cone.

OPERATIONAL STAFF

Manager
↓
Assistant Manager
↓
Supervisor
↓
Senior Operator
↓
Operator
↓
Assistant Operator
↓

Helper

PROCESS FLOW

Dispo
↓
Yarn from store
↓
Creeling
(According to warp plan)
↓
Machine setup
↓
Section wise warping
↓

Beaming

SECTIONAL WARPING MACHINE:

No of m/c: 3
Brand name: BENNINGER
Origin: SWITZERLAND

Creel capacity: 560 & 720
Creel type: H type
Maximum beam width: 2200 mm

Fig: Sectional Warping

Warp width:

Total Ends	Warp Width
Below 7060	1900 mm
Above 7060	2100 mm

Machine Setting:

Set up parameters	Range	Set value
Cone no. of Creel	560-720	As required
Warping Speed	1-45 m/min	As required
Warping length	1-999999 m	As required

EXAMPLE:

If,

Creel Capacity = 720

Total no of ends = 6550

No. of ends in a repeat = 48

Then,

Total no. of repeat = $\frac{6550}{48}$ = 137

Pattern repeat = $\frac{720}{137}$ = 5.25 ≈ 5

Creel capacity utilization = 137 × = 685

No. of section =$\frac{6550}{685}$ = 9.56

So, 9 × 685 = 6165 ends in 9 section &

(6550 – 6165) = 385 ends in the 10th section.

CHAPTER 10

SIZING

SIZING

The process of applying a protective adhesive coating upon the yarns surface is called sizing. This is the most important operation to attain maximum weaving efficiency especially for blended and filament yarns. The objectives of sizing are the following –

- To improve the weave ability of warp yarn.
- To maintain good fabric quality by reducing hairiness, weakness and by increasing smoothness, strength of yarn.
- To increase the tensile or breaking strength for cellulose yarn.
- To increase the elasticity.
- To remove the projecting fibres.
- To reduce electrostatic formation for synthetic or blended yarn.

Fig: Sizing m/c

MACHINE SPECIFICATION

No. of m/c: 2

Brand Name: BENNINGE & JUPITER Origin: GERMANY & INDIA

Back beam Capacity: 1 (For both machines) No. of size Box: 1 (For both machines)

Capacity of size box: 125 Liter (For both machines) No of drying cylinder: 6 & 8

No of Wax box: 1 (For both machines)

Power Consumption: 76k

UNITS OF THE MACHINES

1. Back Beam unit
2. Sizing Unit
3. Drying Unit
4. Leasing Unit
5. Beaming or Take up unit

Controlling Points:

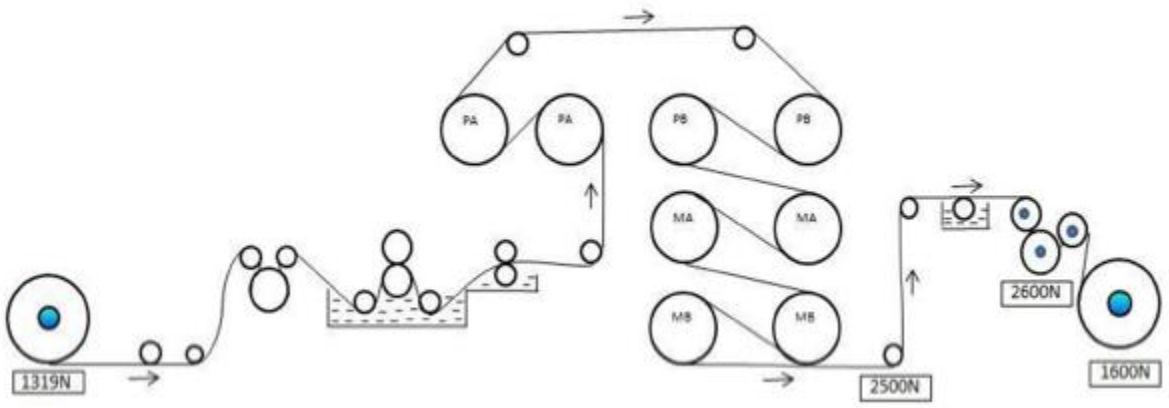
1. Speed of the Yarn Passing
2. Drying Unit - Cylinder temperature must not exceed 100˚C to maintain R.H. less than 6% which is a requisite for cotton yarn.
3. Squeezing Pressure: A typical roller pressure for wide variety of cotton yarn is given below –

Minimum – 1.40

Maximum – 2.20

4. Stretch: Wet zone - 0.5% & Post feed – 0.0%
5. Separation Unit: Distances between the lease rods are to be carefully set up for solid dyed & yarn dyed fabrics.
6. Headstock: All the settings are done from here.

YARN PATH DIAGRAM : JUPITER



Here,

A = Warp Beam
B = Size Box
C = Wax Box
D = Sized Beam

Pre dryer – A = 120°C
Pre dryer – B = 115°C
Main dryer – A = 105°C
Main dryer – B = 100°C

YARN PATH DIAGRAM : BENNINGER

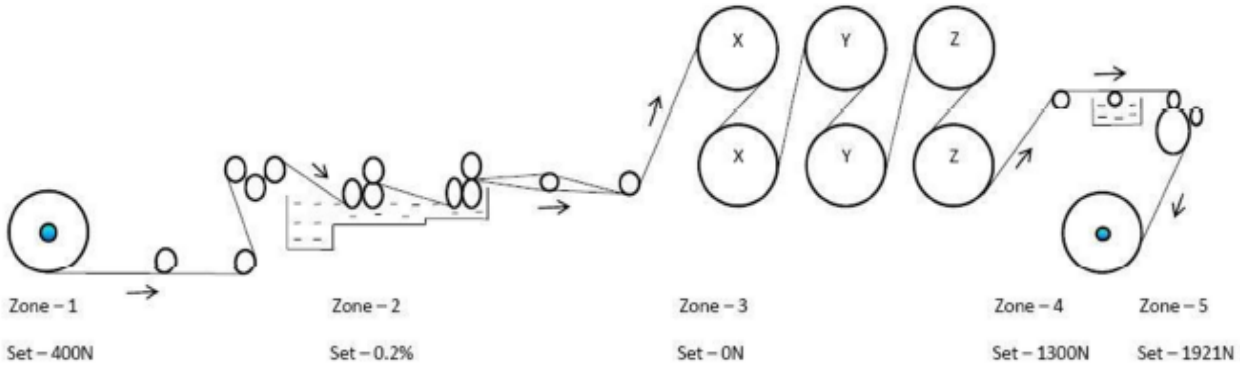


Fig: Yarn Path Diagram of BENNINGER

Here,

A = Warp Beam
B = Size Box
C = Wax Box
D = Sized beam

X = 125°C
Y = 120°C
Z = 115°C

Fig: Sizing Tank

SOME TYPICAL SIZE RECIPES USED IN EVINCE

For 8450/7750 Ends

Sure bond 70/90 = 70kg

Modified Starch = 20kg

Arkofil= 22kg

Glissofil = 4kg

Water = 500

Litre Viscosity = 8.5

R.F = 12

For 9400 Ends

Sure bond 70/90 = 90kg

Modified Starch = 30kg

Arkofil= 23kg

Glissofil = 5kg

Water = 500

Litre Viscosity = 8.5

R.F = 15.5

For 8350/9400 Ends

Sure bond 70/90 = 60kg

Modified Starch = 18kg

Arkofil= 27kg

Glissofil = 5kg

Water = 500Litre

Viscosity = 8.25

R.F = 11.5

For 7750/7060 Ends

Sure bond 70/90 = 60kg

Modified Starch = 15kg

Arkofil= 18kg

Glissofil = 3kg

Water = 500Litre

Viscosity = 8

R.F = 10

Calculation

For making size solution Refraction Factor (RF) is very important. Now we know about RF.

$$RF = \frac{\text{Dry size pick up}}{\text{Wet size pick up}} \times 100$$

If, dry size pick up = 12
Wet size pick up = 110

Then, $RF = \frac{12}{110} \times 100$
$= 11\%$

Standard RF,
For (40-50) Ne yarn = (8-10) %

For (20-30) Ne yarn = (6-8) %
Now we describe about the preparation of size liquor and their calculation.

For an example,
If total ends = 7060
WSP = 110%
Beam length = 1200m
Then,
Wet of yarn = $\frac{7060\times1200\times1.0936}{40\times840\times2.2046}$kg
$=125$kg

Size liquor = weight of yarn × WSP%
$= (125\times110\%)$
$= 137.50$L

Extra (50-6-)L size liquor is taken as wastage.
So size liquor will be near about 200L.
But here condensation is about 12%

Then total liquor = (200+24) L
$= 224\text{L} \approx 225\text{L}$
As RF = 8%
So to make 100L liquor solid chemicals required 8kg
Now to make 225L liquor solid chemicals required = $\frac{225\times8}{100}$ kg
= 18kg

Modified Starch = 50% of total chemicals

CMC = 25% " " "
PVA = 15% " " "
Acrylic = 10% " " "

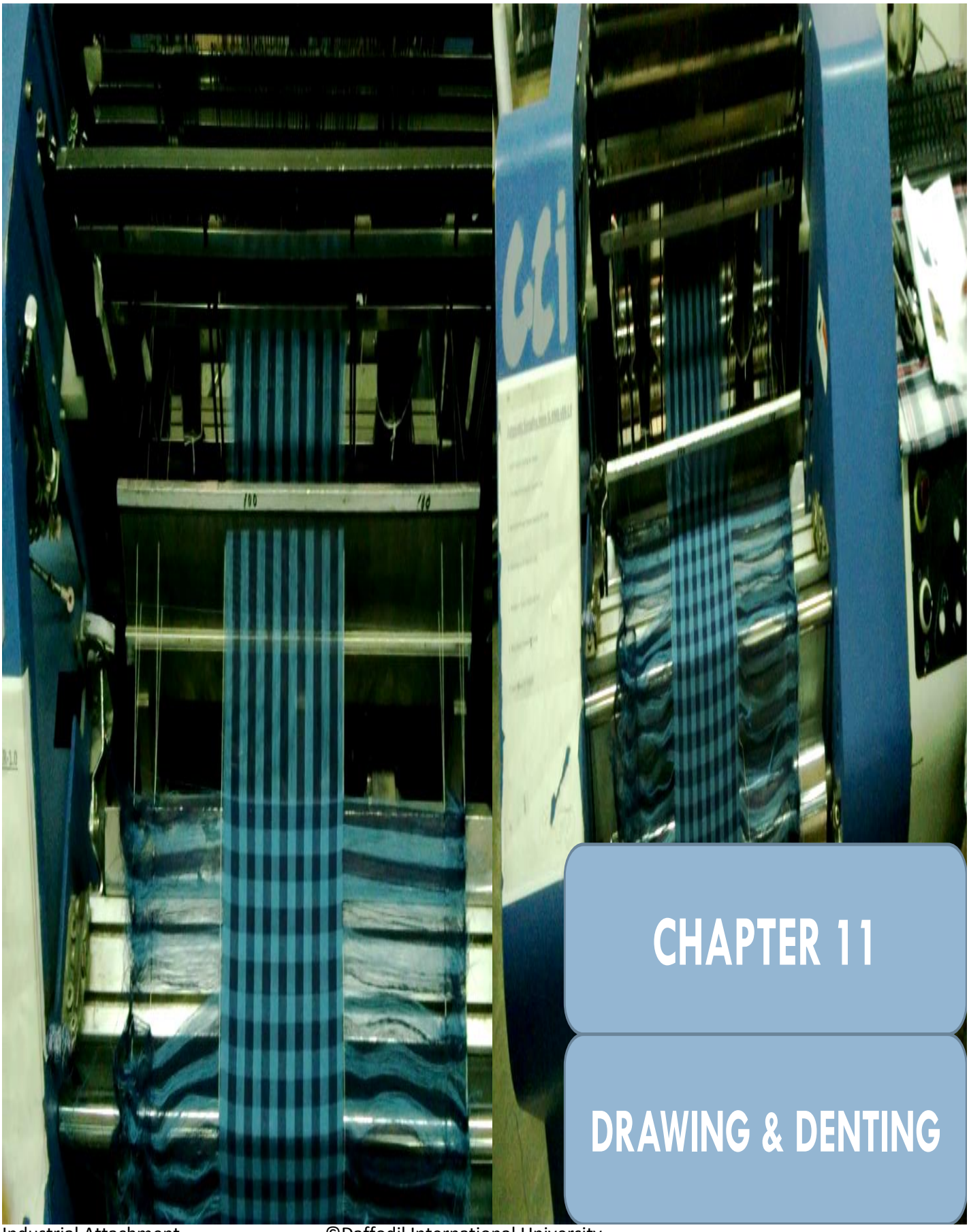
Now,
Modified starch = 18kg × $\frac{50}{100}$
= 9kg
As starch contain (12-18)% water
So, total weight of starch = (9+1.2) kg = 10.20kg

CMC = 18kg × $\frac{25}{100}$
= 4.5kg
As CMC contain 8% water
So, total weight of CMC = (4.5+0.36) kg=4.86kg

PVA = 18kg×$\frac{15}{100}$
= 2.70 kg
As PVA contain 5% water
So, total weight of PVA = (2.70+0.135)kg
= 2.8135 kg

Acrylic = 18kg×$\frac{10}{100}$
= 1.80kg
As water contain (25-30)%
So, total weight of acrylic= (1.8+0.54)kg = 2.34kg
Wax=1kg

For 7060ends
Modified starch=10.20kg
CMC =4.86kg
PVA=2.8135kg
Acrylic=2.35kg
Wax=1kg



CHAPTER 11

DRAWING & DENTING

Drawing, Denting Section

PROCESS DEFINATION

After a sized beam or weaver's beam is made, it is time to mount this beam over the loom. There are two methods used to prepare this beam for mounting on a loom.

1. knotting (Quick style) change process.
2. Drawing – in and beam gaiting.

Knotting

This method is limited to use where and exactly same article or quality of fabric is to be made that is already running in the loom. The following points are considered-

1. The total number of warp ends should be the same as that of running.
2. The count of yarn and weave design should be same.

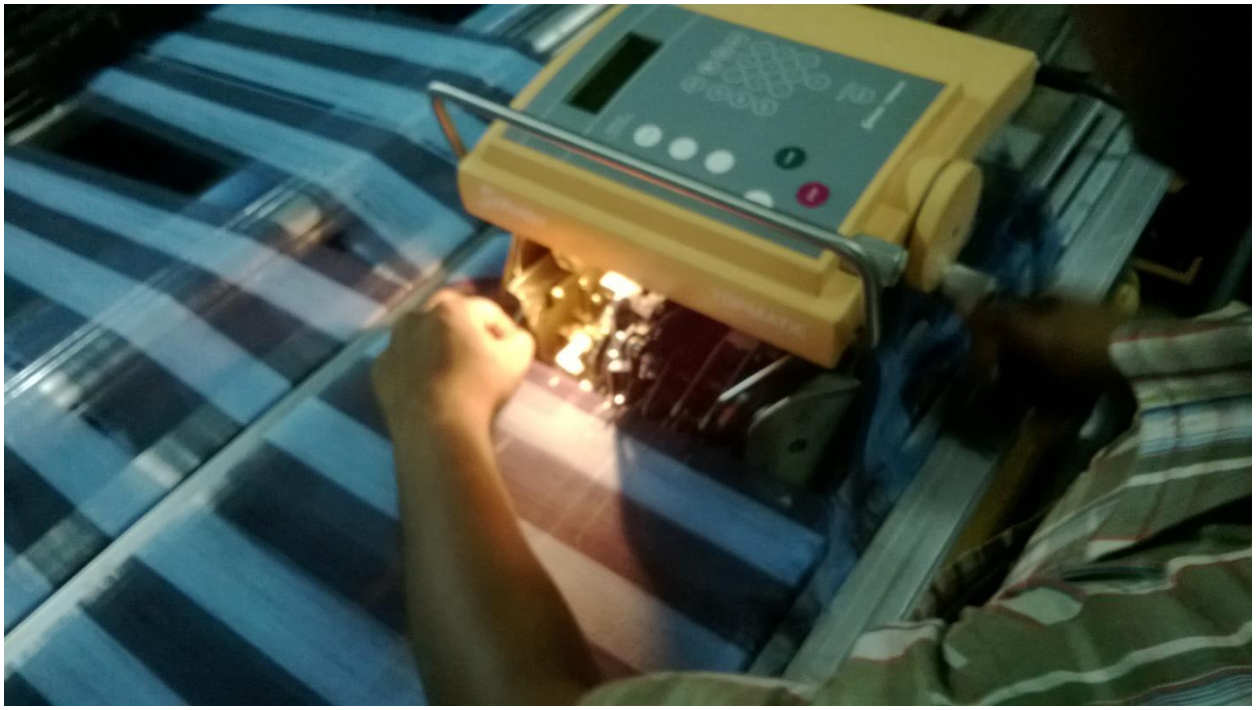


Fig: Knotting

Before tying a new beam with an older one, the new beam is to undergo a process called

leasing, whereby the adjacent yarns are kept separated by placing a yarn in between them. This is very essential in case of tying a yarn dyed beam; otherwise the warp pattern scheme will be disturbed and lost. For monocular beam (solid dyed beam), tying is performed without leasing.

WARP TYING OPERATION PROCEDURE

1. According to that plan, knotting – in – charge & Drawing – in – charge jointly arrange leasing of beams, the respective beams being identified from the sizing data sticker.
2. As leasing is completed the beam is transported to a specific loom and mounted on loom beam bracket. The tying frame is set on proper position.
3. The ends of old beam and the ends of the new beam are accurately brushed and gripped by the frame so that older and newer ends make and upper & lower set of yarn placed in proper tension.
4. The warp tying head is mounted over the tying frame. In case of STAUBLI machine, number of knots per repeat of color pattern is entered in to machine.
5. Then the machine is started. After the programmed number of knots per color is reached, knotting will stop. Operator will check the correctness of the knot and start again by switch.
6. Thus knotting will be completed up to the end of set, tying up per set of older yarn with lower set of new warp.

7. As knotting is completed, the knotting operator make a quality card mentioning customer name, work number, beam number beam length, knotting operator's name and date and time of knotting.
8. The sizing date sticker is set over the quality (of doffing) card and the card is set over the loom.
9. The knotting operator also makes a work record in his register book.
10. As knotting is completed, tying head and frame are removed, the old piece odd knotted yarn is pulled through the machine, i.e. through heald wire and reeds and thus new warp set is allowed to pass and made ready to run.

DRAWING–IN

The method of mounting weaver's beam on to the loom, which is adopted for the same style of working of adjacent warp yarns or yarn interlacement, compared to that of running in looms. In this method warp yarns are separated individually as per count or color pattern from the adjacent yarn and hooked to the access of drawer's hook called reaching – in. The yarn as it comes to "reach" or drawer's hook is then drawn through dropper (or drop wire) and then passed through the split of the reed dent called denting.

Fig: Drawing

DRAWING –IN & REACHING –IN OPERATION PROCEDURE

1. The customers fabric swatch is sent to the weaving section, generally after warping is done, either by enclosed to the order sheet to form or separately. Assistant manager (weaving) then analyzes the swatch for reproduction. In this stage the determines –

a. The design of sample i.e. whether dobby or tappet or combination of two.

b. The drawing – in, denting and lifting or tappet/ cam setting plan.

c. The required number of heald frame and reed count, draw width etc.

2. Then whenever the sized beam is ready, the worked out drawing – in plan, reed count

etc. against an order number is given to the drawing – in – charge for production.
Drawing – in – charge for production. Drawing – in – charge makes a work program considering the following:

a. The availability of the run out loom for beam.

b. The availability or required number of reed count.

3. Drawing – in – charge and senior drawer find out the desired sized beam number from the sizing production record, check against the specific work order number and from transport these to the drawing – in – section by trolley and start working there.

4. According to the work order numbers each design/ drawing – in plan is recorded in the register book, the produced sample being attached thereafter.

5. After drawing – in/ denting is completed each beam is set with a quality/ doffing card, the sizing data sticker is being attached on the card.

6. During deciding the loom number the drawing – in – charge takes into consideration designing scope and color insertion scope of the respective loom.

7. Finally beam gaiters carry this beam along with dropper, healds and reed with trolley onto the specified loom and mount.

8. They will pull the new yarn from the beam and set in the loom with dropper, healds and reed properly positioned and tie the new yarn with the old piece of cloth wrapped around the surface roller with a number of small knots.

EQUIPMENT USED IN DRAWING, DENTING & PINNING SECTION

Denting plate (Patti):

Drawing Hook:

CHAPTER

WEAVING

Weaving Section

Process definition:
The act of inter lacing warp yarn(of a beam) with the inserted weft yarn in a definite order to form a fabric suitable for use as a dress material, domestic or industrial purpose is called weaving. The machine used for this purpose is called loom.

Process equipment:

Types of loom - RAPIER LOOM

Unit – 1:
Total No. of Looms – 76
SOMMET – 40
SMIT TEXTILE – 21
SILVER HS – 15

Unit – 2:
Total No. of Looms – 80
SILVER HS – 40
LEONARDO SILVER – 40

EQUIPMENTS OF LOOM SECTION

Name of the Loom	Model	Origin	Shedding Device	R.P.M (Avg)	No. of Looms
Rapier Loom	SOMMET	ITALY	Dobby	450	40
	SMIT TEXTILE	ITALY		450	21
	VAMATEX	ITALY		465	95

Fig: Rapier Loom

SPECIFICATION OF RAPIER LOOM

GENERAL SPECIFICATION

Motor R.P.M	600
M/C speed	450 PPM
Motor pulley Dia	100mm
M/C pulley Dia	185mm
Reed Plain Reed	
Shedding Electro-mechanical	Dobby
Take up motion	Electronic
Let off motion	Electronic
Warp stop	Electrical
Weft stop	Electronic

SIGNAL LAMP

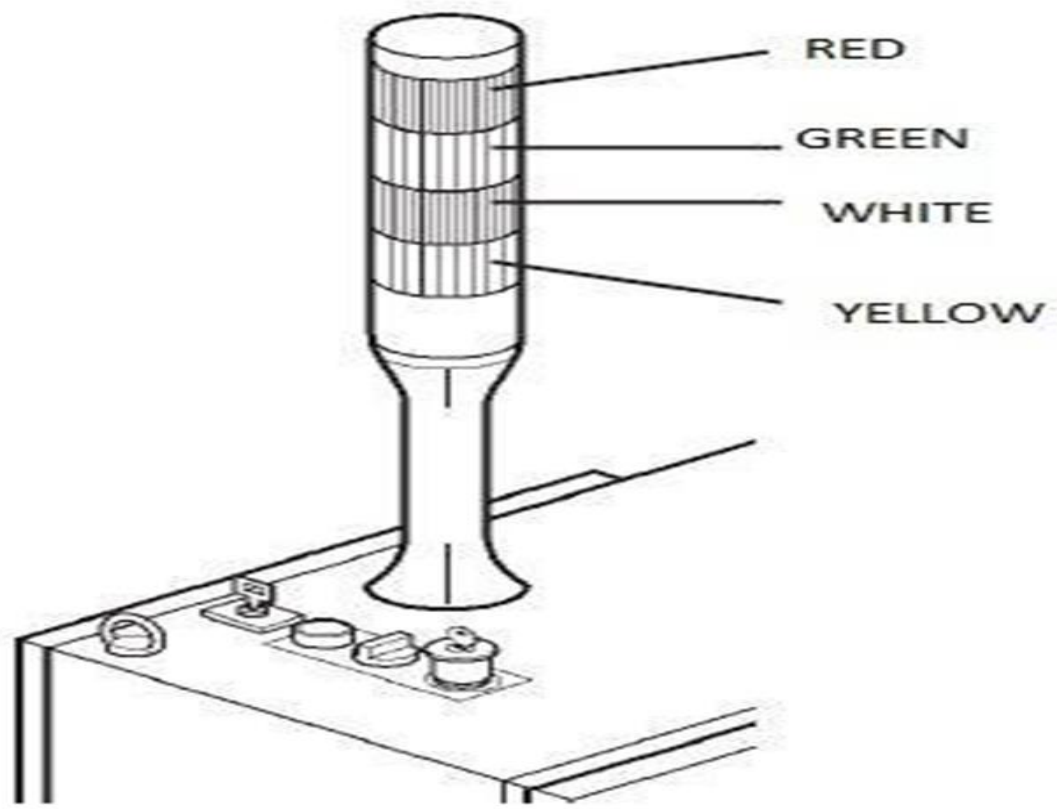


Fig: SIGNAL LAMP

OPERATION STUFF

DGM

Manager – Section in charge

Production officer – Shift in charge

Loom Technicians – Shift wise running loom checking/ tuning/ setting & gauging

Senior loom operator – As a line jobber, for production & Q.C.

Loom Operator

Helpers & movers – For supplying yarn and yarn cartoons

Casual worker – For keeping the machine & section clean

YARN PATH DIAGRAM IN LOOM

Warp Yarn Path:

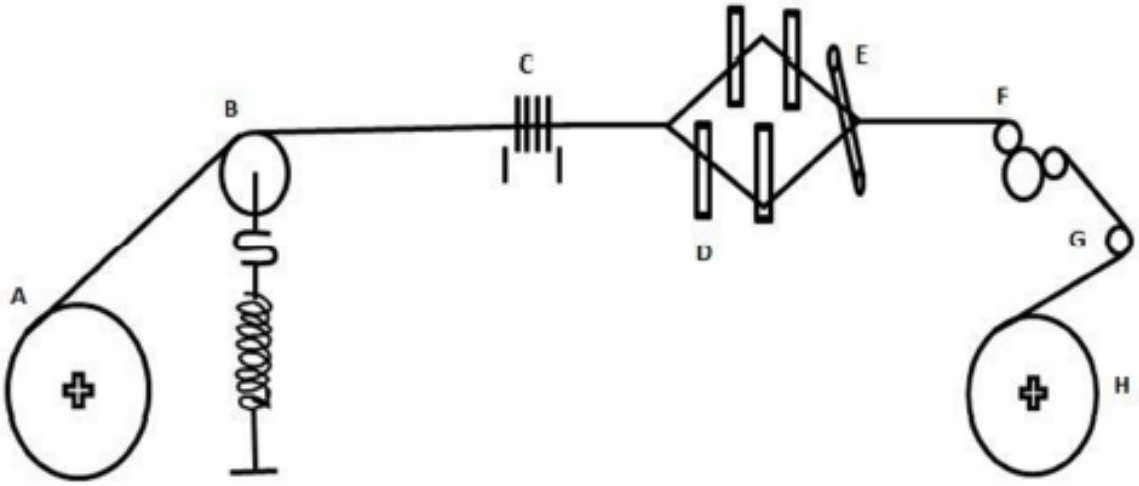


Fig: Yarn path diagram

A = WARP BEAM
B = BACK REST
C = DROPPER
D =HEALD FRAME
E = REED
F = FRONT REST
G = TAKE UP ROLLER
H = CLOTH ROLLER

Weft yarn path:

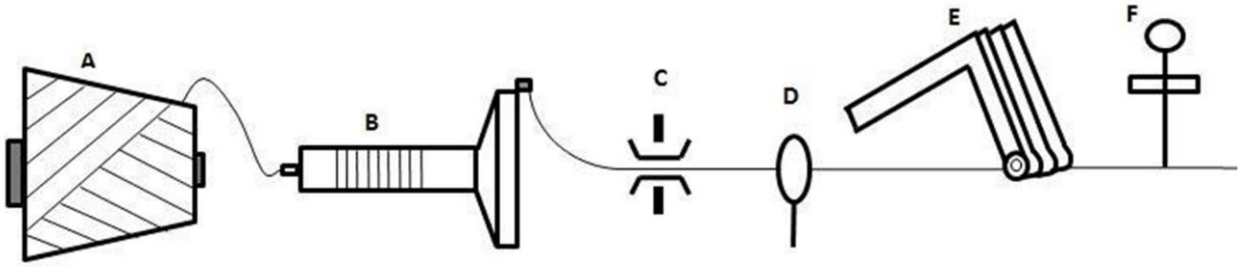


Fig: Weft insertion path

A = Cone
B = Accumulator
C = Tension device
D = Guide
E = Finger
F = Cutter

LUBRICATION OF DIFFERENT PARTS

The correct and effective lubrication of mechanical organs is essential for the machine to operate correctly, avoiding premature wearing and possible damage to the various components. The main mechanisms are oil-lubricated by a closed pressure circulation system.

The lubrication system therefore only requires regular lubricant level checks, with top ups when necessary. The front regulator and the warp let-offs are not in the pressure circulation system and operate in an oil bath. Here too, the lubricant level needs to be checked and replaced at set intervals. Other external mechanisms need to be oiled or greased by hand at the set intervals.

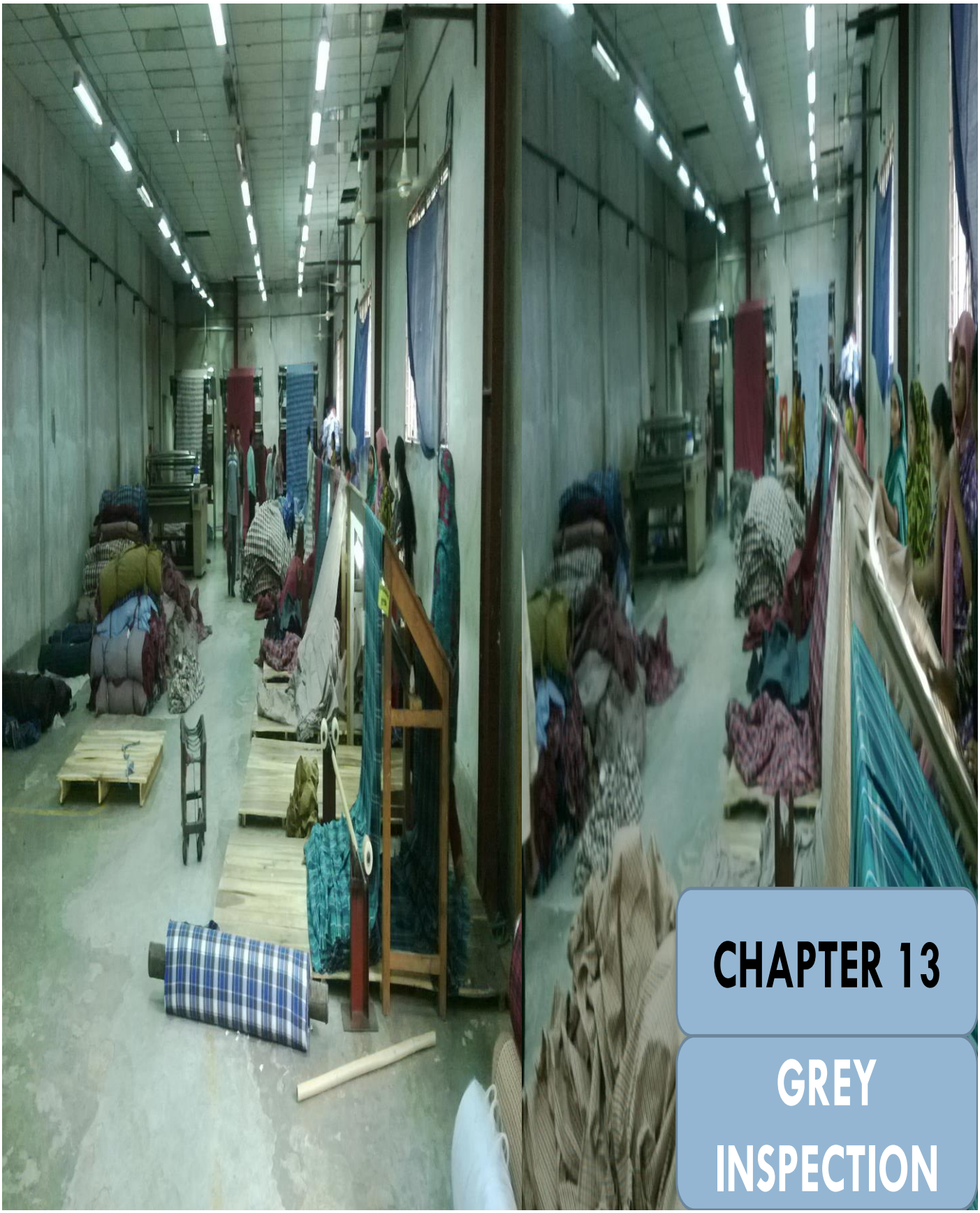
In this case, all components where dust can build up should be cleaned thoroughly before lubricating these.

UMITS TO BE LUBRICATED WITH OIL –

- Pressure lubrication circuit tank
- Front regulator
- Single, double, twin & upper beam let-offs

UNITS AND POINTS TO BE LUBRICATED WITH GREASER, OILER OR BRUSH –

- Gear & beam drive wheel
- Rotating rollers
- Rolling pins or collars
- Toothed wheel drive chain & cloth roller pins
- Wooden separators for heald frames
- Lateral heald guide cloth



CHAPTER 13

GREY INSPECTION

GREY INSPECTION

Two persons can do the job-

1. Loom checker
2. Grey inspection checker

CHECKING POINT FOR YARN DYED FABRIC -

1. construction
2. width
3. weave design as standard
4. selvedge
5. reed number
6. denting order
7. design/color/pattern

All check points are checked by first meter checker and executive will confirm that ok or not ok.

By comparing with the first meter of first loom and approved sample.

LOOM CHECKERS JOB -

Any type of fault likes -

1. stop mark
2. miss pick
3. double pick
4. wrong knotting etc. found then this sample is not approved

LIST OF EQUIPMENTS –

1. scissor
2. pick counter
3. measuring tape

Fig: Inspection

INSPECTION MACHINE SET UP

M/C Set Value & Parameter Check	M/C Set Value & Functionality Check
Guide roller speed	40 meter/min
Light Artificial	day light
Length measuring meter	Attached with the fabric & the m/c
Automatic cutter(knife)	Functionality check
Slippage measuring roller	Functionality observe
Batcher	Check batcher setting with motor

FOUR POINT INSPECTION SYSTEM

Generally any piece of fabric with less than 40 points fault per 100 square yard is allowed to pass however for a roll; the average value should not exceed 28 points per 100 square yards. More than 40 points fault per 100 square yards is recorded as reject. Normally fabric faults are recorded using the 4-point system given below:

4-Point Grading System	
Fault length	**Points to be assigned**
(0 to 7.5) cm or less than 3"	1 points
(7.5 to 15) cm or (3" to 6")	2 points
(15 to 22.5) cm or (6" to 9")	3 points
More than 22.5 cm or 9"	4 points

ASSESSING FABRIC FAULT –

Faults Name	Definition	Faults Area	Points
Double pick	In full width an extra pick	0 to 9 inch over	4
Miss pick	Missing of one or more picks	0 to 9 inch over	4
Reverse pick	After arriving reverse back and causes double pick	0 to 3 inch over	1
Broken or half pick	Pick less than full length	0 to 9 inch over	4
Crack	More than three pick missing	0 to 9 inch over	4
Snarling	Bunch of weft yarn woven in one place	1 inch	2
Pressure loose	Loop formed in the fabric	Between 1 yds	4
Let-off mark	Weft way mark for irregular pick dense	0 to 9 inch over	4
Wrong pattern	Design broken on warp way	0 to 9 inch over	
Starting mark	Weft way mark while starting the loom	Full width	4
Reed mark	Reed having more gap than the normal way		Reject
Temple mark	Along the temple one or more pin mark visible		Reject
Count mixing	Mixing of various count		Reject
Slubs	Bunch of fibers in yarn	0 to 1 inch	1
Double yarn	One extra warp yarn woven along with regular warp		Reject
Loose warp	One or more warp yarn having more looser than another warp	Mandible	Reject
Tight warp	One or more warp yarn having more tighter than another warp	Mandible	Reject
Stitch/warp float	One or more warp yarn not properly interlaced with weft for some distance	0 to 3 inch over	1
Zala	Bunch of warp yarn breakage	0 to 9 inch over	4

STUFFS IN GREY INSPECTION ROOM –

Grey inspection incharge (1), Supervisor (1), Inspector (10), Mender (30), Helper (17), and Cleaner (1)

FABRIC INSPECTION

PROCESS DEFINITION

Fabric inspection is the process of identifying weaving faults in the fabric just after the grey Fabric production in the loom.

EQUIPMENTS -

1. Inspection table
2. Fabric inspection machine (STT MACHINERY, Taiwan)

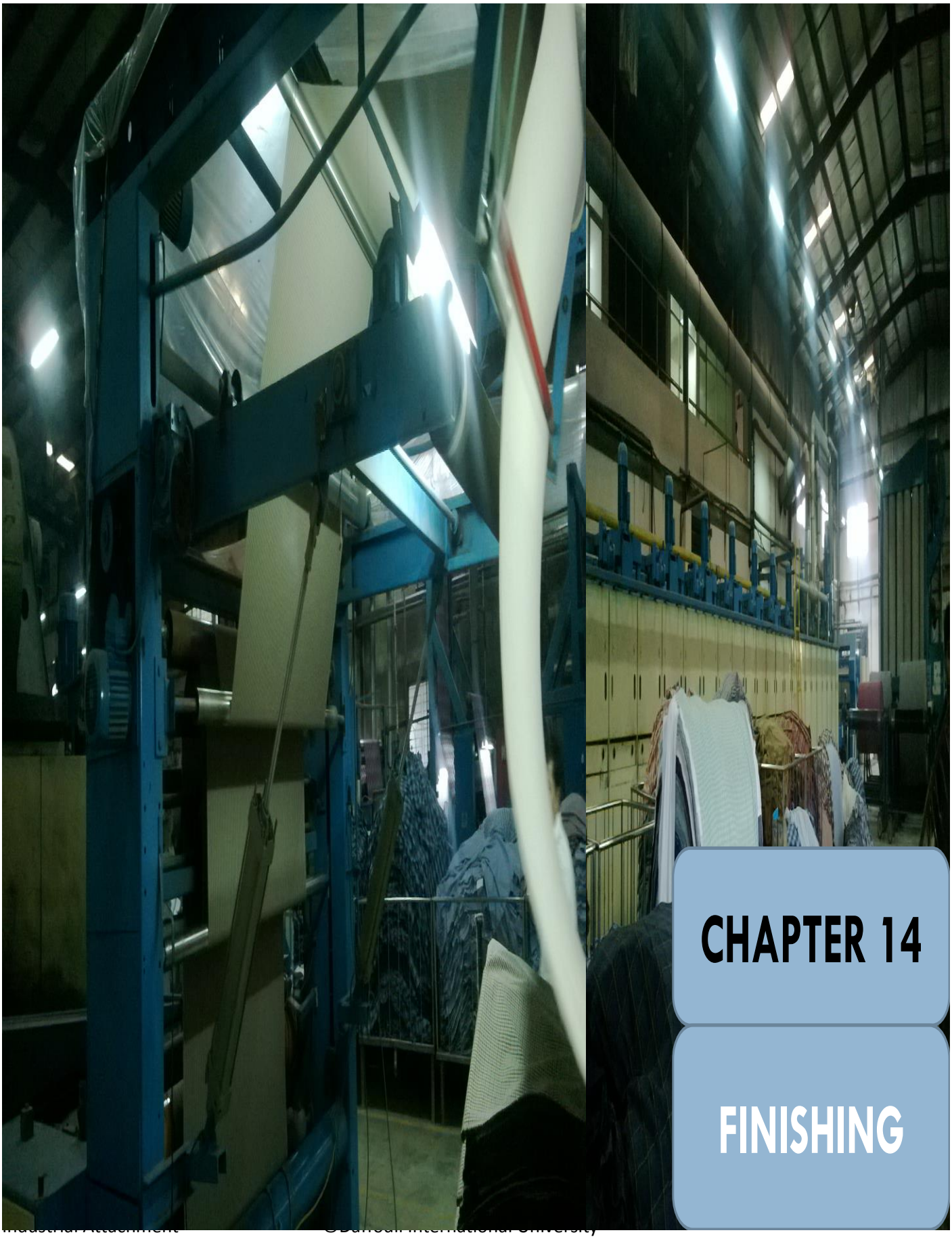
KEY ACCESSORIES -

Nipper, Pointer, Cutter, Comb etc.

STUFFS IN INSPECTION ROOM -

Shift In-charge(3), Operator(7), Helper(28), Helper(28) and Cleaner(1)

Fig: Fabric Inspection



CHAPTER 14

FINISHING

FINISHING

After gray inspection fabric is goes to finishing section to make final product for buyer according to their requirement.

OPERATION STUFFS

Assistant General Manager
↓
Manager
↓
Assistant Manager
↓
Senior Executive
↓
Executive
↓
Junior Executive
↓
Supervisor
↓
Senior Operator
↓
Assistant operator
↓
Operator
↓
Helper

GENERAL PROCESS SEQUENCE FOR FABRIC FINISHING

Laying (than or roll)
↓
Singeing/Desizing
↓
Rotary (Batching)
↓
Washing (Hot Water only)
↓
Q.C Check
↓
Stenter (Soft or Easy care)

↓
Peaching
↓
Sanforize (Shrinkage Control)
↓
Q.C Check
↓
Final Inspection
↓
Shade Batch (roll marking)

Operation procedure:

The steps involved in the Inspection Process are as follows:

1. Inspector connects the batcher with motor and feeds the fabric by the guide roller. The fabric goes through a special table where there are arrangements for special lighting to detect faults in the fabric visually.
2. Fabric is inspected as per inspection procedure of 4-point system. After the inspection, the fabric is rolled or folded without any crease and is packed by polythene paper. The inspector puts the Identification Sticker on the fabric roll with details of the fabric (i.e. order no, customer, batch no, shade, roll no, usable width composition etc.).
3. Each roll contains fabric to a minimum of 15 yards & a maximum of 300 yards. The packaged roll is stored in fabric go down.

Fig: Finishing

FABRIC FINISHING MACHINERIES

1. Singeing-Desizing 1 set
2. Washing machine 1 set
3. Stenter 1 set
4. Sanforizing m/c 1 set

1. **SINGEING-DESIZING MACHINE**

Fig: Singing & desizing m/c

Name – Osthoff-Senge

Origin – Germany

Year – 1984

Model – U80

Double gas burner with both side singeing

Gas Pressure – 1.9 bar

Machine speed – 38 m/min

4 dip 4 nips for Desizing process (up to 90% take-up)

Desizing mixing tank capacity - 400 liter

No heat, only agitation is applied in the desizing tank

Desizing occurs at 62◦C temp.

2. WASHING MACHINE

Name – Ramisch Kleinewefers

Origin – Germany

6 washing chambers (chamber 1-5 -95 ◦c, chamber 6 -50 ◦c temp)

16 cylinders (1-14 Steam cylinder & 15, 16 are cold water cylinder)

3. STENTER

Name– Stentex

Origin –Germany

Fig: STENTER

Chain type stenter (fabric clipping by pin)

11 Drying chambers with 2 cameras at the front of machine

Delivery width - 154 cm

Soft finishing or Easy care finishing chemical applied during feeding.

Machine settings for easy care finish -

M/c speed – 35-45 m/min, Width -154 cm, Max pressure -0.5 bar

Temperature -130 ◦C × 3 chamber - 150 ◦C - 170◦C – 175 ◦C × 6 chamber

Machine settings for soft finish

M/c speed – 50 m/min Width -154 cm Max pressure -0.5 bar

Temperature -130 ◦C × 3 chamber - 140 ◦C – 150 ◦C × 7 chamber

4. SANFORIZING MACHINE

Name – Cibitex

Origin – Italy

First water spray unit for smooth damping. Damping unit with perforated cylinder for steam application, controlled shrinkage unit (Rubber belt & Steam cylinder) where pressure can be

controlled by belt tension (small amount). Compression & calendaring unit (blanket & big steam cylinder) for giving luster to the fabric. Cold water cylinder for heat absorption from fabric. The fabric is guided through the folding unit for storing on the tray.

Fig:Sanforizing m/c

Further Processes:

Sanforized fabric is sent to the quality control department for determining the quality of the fabric. Only fabric of the first batch is taken.

CHAPTER 15

QUALITY ASSURANCE SYSTEM

QUALITY ASSURANCE SYSTEM

Introduction

To ensure safe and consumer friendly fabric, Evince Textiles Ltd has its own hi-tech laboratory and computer data processing system. The laboratory is fully equipped with modern testing equipment enabling them to check the fabrics in all the stages of required testing criteria and performances. Testing equipments are sourced from renowned companies, such as-
Mesdan Lab - Italy
James H Heal – UK
AATCC Appearance Tester – USA

Quality assurance & lab testing section

Physical tests

Test Name	Equipments	Manufacturer
Thread per inch	Thread counter	James. H. Heal England
Gram per square meter	G.S.M cutter	Antonio Brustio, Italy
Shrinkage% & Stretch%	Measuring Scale	James. H. Heal England
Washing machine	Wascator FOM 71 CLS	Electrolux
Drying machine	Roaches opti-dry	Roaches engineering ltd
Tearing strength	Elmendorf tearing strength tester	Mesdan Lab, Italy
Seam slippage &Tensile strength	Tensolab software	Mesdan Lab, Italy
Abrasion resistance	Martindale Abrasion & Pilling tester	Mesdan Lab, Italy
Smoothness appearance	Three dimensional smoothness appearance replicas	AATCC, USA
Shade Check	Light box	VeriVide

CHEMICAL TEST

Test Name	Equipments	Manufacturer
Wash Fastness	PID System	Mesdan Lab, Italy
Perspiration Fastness	PID System	Mesdan Lab, Italy
pH	pH tester	Rudolf Chemie

EVINCE TEXTILES LIMITED
QUALITY ASSURANCE DEPARTMENT
FINISHED FABRIC TEST REPORT

ORDER NO.		TEST STANDARD	E T L
BUYER		CONSTRUCTION	
SHADE		FIBRE COMPOSITION	
QUANTITY/BATCH NO		FINISH TYPE	

CONSTRUCTION	ISO 7211/2-1984	E.P.I : +/-3%:		
		P.P.I : +/-3%:		
FABRIC WIDTH	ASTM D3774-2002	+ / - 1 "		
FABRIC WEIGHT	ISO 3801	+/-5% GM/SQ.MTR		

TENSILE STRENGTH	ISO 13934-2:1999 (Grab Method)	WARP	120 N		
		WEFT	120 N		

TENSILE STRENGTH	ISO 13934-2:1999 (Grab Method)	WARP	120 N		
		WEFT	120 N		

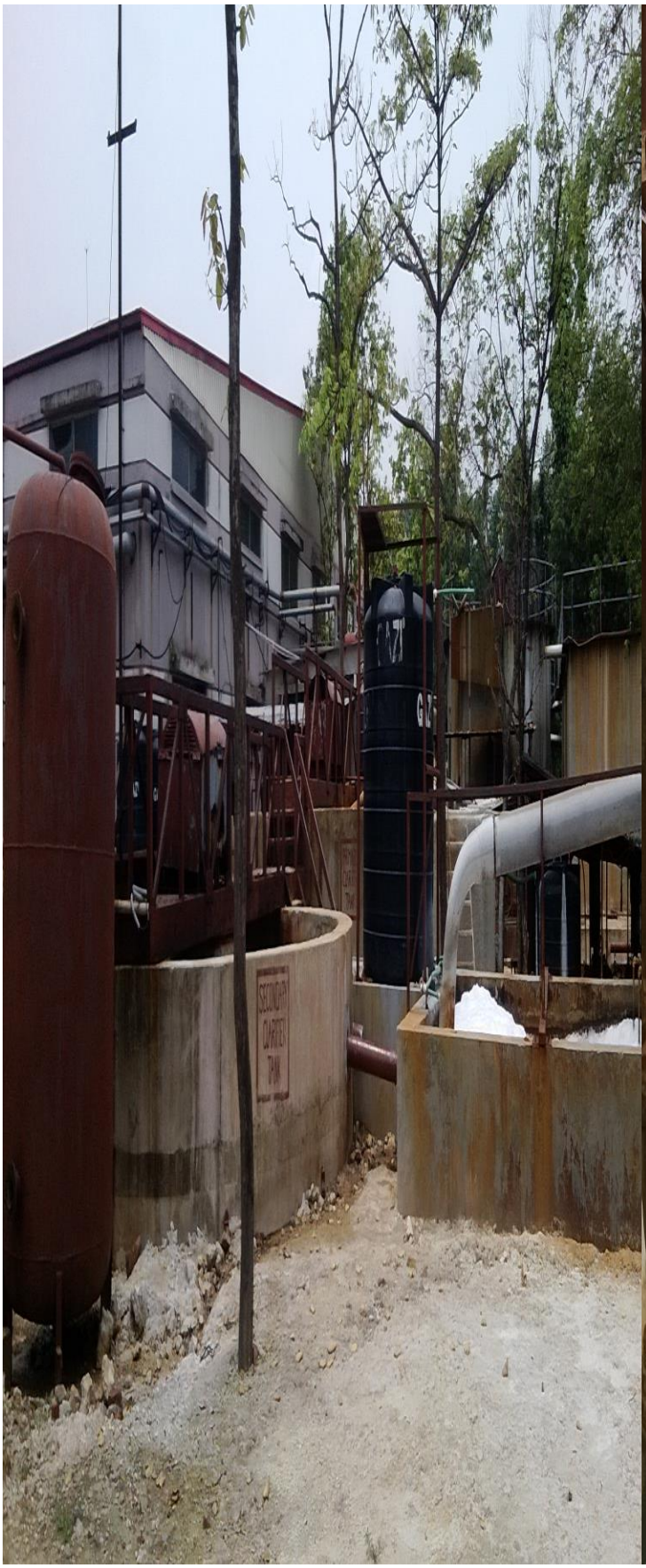
TENSILE STRENGTH	ISO 13934-2:1999 (Grab Method)	WARP	120 N		
		WEFT	120 N		

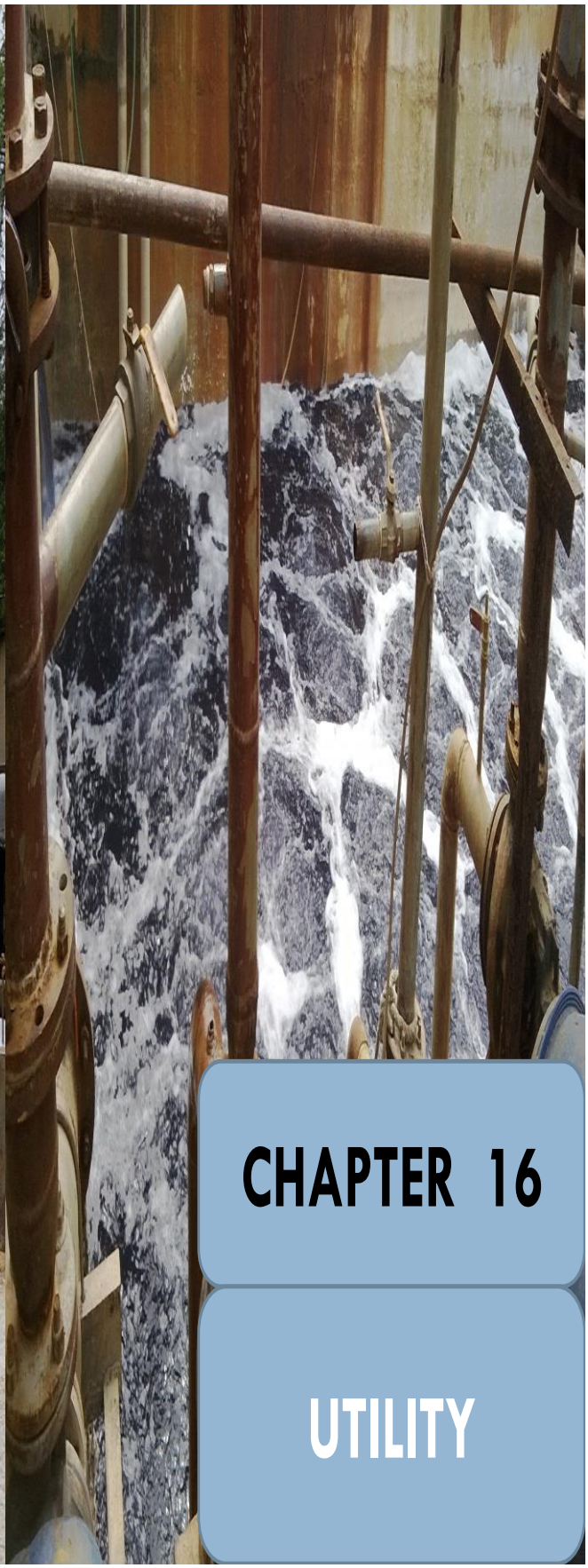
TENSILE STRENGTH	ISO 13934-2:1999 (Grab Method)	WARP	120 N		
		WEFT	120 N		

TENSILE STRENGTH	ISO 13934-2:1999 (Grab Method)	WARP	120 N		
		WEFT	120 N		
TEAR STRENGTH	ISO 13937-1:1999 (Elmendorf	WARP	7000 mN		
		WEFT	7000 mN		
SEAM SLIPPAGE	ISO 13936-1:1999	WARP	80 N		
		WEFT	80 N		
SEAM SLIPPAGE	ISO 13936-1:1999	WARP	80 N		
		WEFT	80 N		
ABRASION RESISTANCE	ISO 12947-2 1999 Martindale	Face side Resistance-10,000 rubs Shade Change/5000 rubs)			

ABRASION RESISTANCE	**ISO 12947-2 1999 Martindale**	**Face side Resistance-10,000 rubs Shade Change/5000 rubs)**		
DIMENSIONAL STABILITY TO WASHING	**ISO 6330-2000**	**WARP : +/-3%**		
		WEFT : +/-3%		
SMOOTHNESS APPEARANCE (FOR EASY CARE FINISH)	**AATCC124(3)(|||)(A|||)**	**DP 2.5 FOR EASY CARE FINISH**		

FIBRE COMPOSITION	BS4407:1988(1933)	+/-3% (No talerance for 100% cotton)				
pH	AATCC 8	4.5 to 7.5				
RUBBING FASTNESS	ISO 105-X12-2001	FINISH TYPE	NORMAL	PEACH		
		DRY	4'S	4'S		
		WET	3'S	2-3'S		
COLOUR FASTNESS TO		WASHING ISO 105 CO6-2002 60 C		PERSPIRATION ISO 105-F 10:1989 Acid pH 5.5	Alakali pH 8.5	
SHADE CHANGE (FADING)	4'C					
STAINING ONCEL ACETATE	4'S / 3'S dk. Col.					
STAINING ONUM COTTON	4'S					
STAINING ON NYLON	4'S / 3'S dk. Col.					
STAINING ON POL YESTER	4'S					
STAINING ON ACRYLIC	4'S					
STAINING ON WOOL	4'S					
LIGHT : @ 20 AFU (XENONARC)	ISO-105-CO6-1989	COLOUR CHANGE Lt/Dk-3-4'C/4'C				





CHAPTER 16

UTILITY

UTILITY SERVICES

There are following utility services are available in Evince:

1. Gas.
2. Water.
3. Electricity.
4. Chiller (Humidifier)
5. Compressed Air.
6. Boiler.
7. Effluent treatment plant

POWER GENERATION

Facility

The main utility electricity is generated by generators which are operated by Gas and Diesel engine. The diesel engine works as standby engine.

There are five gas engine & three diesel operated generators.

Engine Name: Caterpillar, Cummins, Perkins

Manufacturing Country: USA, UK, UK

Capacity

Total Capacity: 3370 KW.

Consumption

Gas Consumption -

Caterpillar – 0.24 m3 / kw-hr

Cummins - 0.24 m3 / kw-hr

Diesel Consumption –

Perkins – 0.27 liters / kw-hr

Specification of Generator

1. Gas engine used.
2. 16 cylinders per engine

3. Overall efficiency – 80-85%

4. Heat recovery possible from 4 engines

5. Exhaust gas temperature =600◦c

6. Pressure of gas = 8-10 psi

7. Engine rpm=1500

8. Engine temperature= 85◦c – 90◦c

9. Cylinder Temperature = 550◦c – 650◦c

10. Oil change after 2500 hours

11. Oil required /engine = 10 ltr.

Distribution

Different Section of EVINCE TEXTILE LTD –

WEAVING 1280KW
YARN DYEING 1520KW
OTHERS 500KW

BOILER

Facility

Pure steam with required temperature must be produced to meet the conditions demand of steam in different sections.

Fire tube type boiler is used to steam generation.

No. of boiler: 5 twine boiler

Capacity

Total: 3+3+4.7 × 3= 20.1 ton /hr.

Steam flow 8 ton/hr each (approximately)

Specification of boiler

1) 3 phase heating system

2) The lower drum is 100% water filled and the top drum is 75% water & 25% steam filled.

3) Always soft water is fed at 75◦F to the boiler chamber

4) 4" depth greasol insulation so no heat at outside.

5) Steam pressure 5.5 bar

6) Brand: Cleaver Brooks

7) Origin: USA

8) Steam temperature: 150◦c

9) Boiler temperature (inner): 250◦c -275◦c

Chemicals used for boiler feed water

NaCl solution for regeneration process. (For water softening)

Sulphamic acid mixture. (Scale removal)

Distribution

1. The major portion of the steam is supplied to the ETL dye house.
   - To heat the drying Cylinders.
   - To heat the calendar rollers.
   - To heat the chemicals liquor.
2. Sizing section of ETL

For Size cooking

Size box to keep required viscosity.

COMPRESSED AIR

Facility

Natural air is drawn by pipe through the filters above the compressor & the air is compressed. In such 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 deserver. Then the water falls slowly through a sieve and becomes cool & feed to the compressor. At the other hand the cooled compressed air along with some vapors are transferred to the reservoir where the vapors are condensed and outlets drop by drop. The moist compressed air is transferred to the dryer & a slight warm compressed air is delivered to required sections of EVINCE TEXTILES LIMITED.]

Capacity

Total number of Compressor	5
Total capacity	4600 Lt/min.
Pressure of deliver air	8.5 bar 6.5 – 7.0 bars (actually produced)
Power consumption	50.5 Amp, 415 V
Temperature	Max +50◦c Min -10◦c

The compressors deliver oil and moisture free compressed air.

Specification of compressor

a) Name: Air compressor.

b) Brand name: Buge

c) Manufacturer: Lohenner GmbH & Co, Germany.

d) Model: DB 115

e) Type: Screw type.

f) Year of manufacture: 2005

Distribution

1. The major consumption of compressed air is in weaving section.

2. To clean different section of machineries.

3. To the sensors where pneumatic pressure required (computerized control machines).

4. For the rotary movement of batcher.

5. Pneumatically controlled loading and unloading of yarn dyeing machinery

Pneumatically controlled loading and unloading of different machinery.

CHILLER

Facility

Water is cooled down below its normal temperature (i.e. 8◦c) through chiller plant. Chiller plant maintains required amount of relative humidity and temperature.

Capacity

Number Chiller: 2
Total capacity: 579 RT (Refrigeration Ton)

Refrigerant specification

1. Machine Name = Steam Two Stage Absorption Chiller
2. Steam consumption = 2345 kg/hr
3. Steam pressure = 0.8 MPa
4. Cooling water flow = 514 m^3/hr
5. Chilled water outlet temp = 7◦c
6. Chilled water flow = 350 m^3/hr
7. Cooling water inlet temp = 32◦c
8. Cooling water flow = 514 m^3/hr
9. Operating weight = 22.3 ton
10. Electric power consumption = 6.1kw

11. Company = Jiangsu Shuangliang Air Conditioning Equipment Co. Ltd.
12. Origin = CHINA

Distribution

The maintenance of relative humidity and temp is very important for weaving to reduce yarn breakage and produce quality fabric.
Chiller plant maintains required amount of relative humidity (80 – 85%) and temp (22 – 26 ◦c) in weaving unit (1, 2). warping, winding and finishing section.

WATER

Facility

Continuous supply of iron and hardness free water for ETL, EYDL must be ensured by pump.

Capacity

Mainly Three pumps are used for water pick up. Daily consumption of water is 44 lacs liter.

Pump	Capacity	Setup
Submersible pump – I,II	120 × 2 m^3/hr	Discharge value: 100% open
Submersible pump – III	60 m^3/hr	Discharge value: 100% open

Depth of pump: 120, 140 & 60 feet respectively.
Also centrifugal pump used for chemical dosing & for yarn dyeing.

Distribution

The major distributions of water are:
1. ETL yarn dyeing house.
2. ETL sizing room for size cooking.
3. ETL finishing section for desizing & stentering.
4. ETL quality control room for washing.
5. Boiler house for steam generation.
6. Chiller room for cool water generation.

GAS

The gas is supplied from Titas Gas.
- Gas is used for steam production.
- Gas is used for power generation.
- Also used for singeing in finishing section.

Generally 36 m^3 gases are required to produce 1 ton steam.
0.3 – 0.4 m^3 Gas is required per KW electricity generation.

COSTING FOR UTILITY

Utility	Cost
Electricity	2.5 Tk/ KW
Air	0.60 Tk/m^3
Water	17Tk/ m^3.
Waste water	12 Tk/ m^3
Steam	500 Tk/ton

EFFLUENT TREATMENT PLANT (ETP)

INTRODUCTION

ETP is used to treat the water used in various purposes in textile processing in EVINCE TEXTILES
LTD to make the water environment friendly.

Number of plant	: 2
Area of Plant	: 6 acres
Type of ETP	: Chemical Plant
Plant capacity	: 110 tons (110 m^3) effluent/hour
Amount of sludge	: 5% of total effluent

Number of treatment plant and their names

1. Tank 1: Equalization tank
2. Tank 2: Reaction tank
3. Tank 3: Primary Clarifier tank
4. Tank 4: Aeration tank
5. Tank 5: Secondary Clarifier tank
6. Tank 6: Clear water tank
7. Tank 7: Sand filter
8. Tank 8: Carbon filter

Plant Diagram

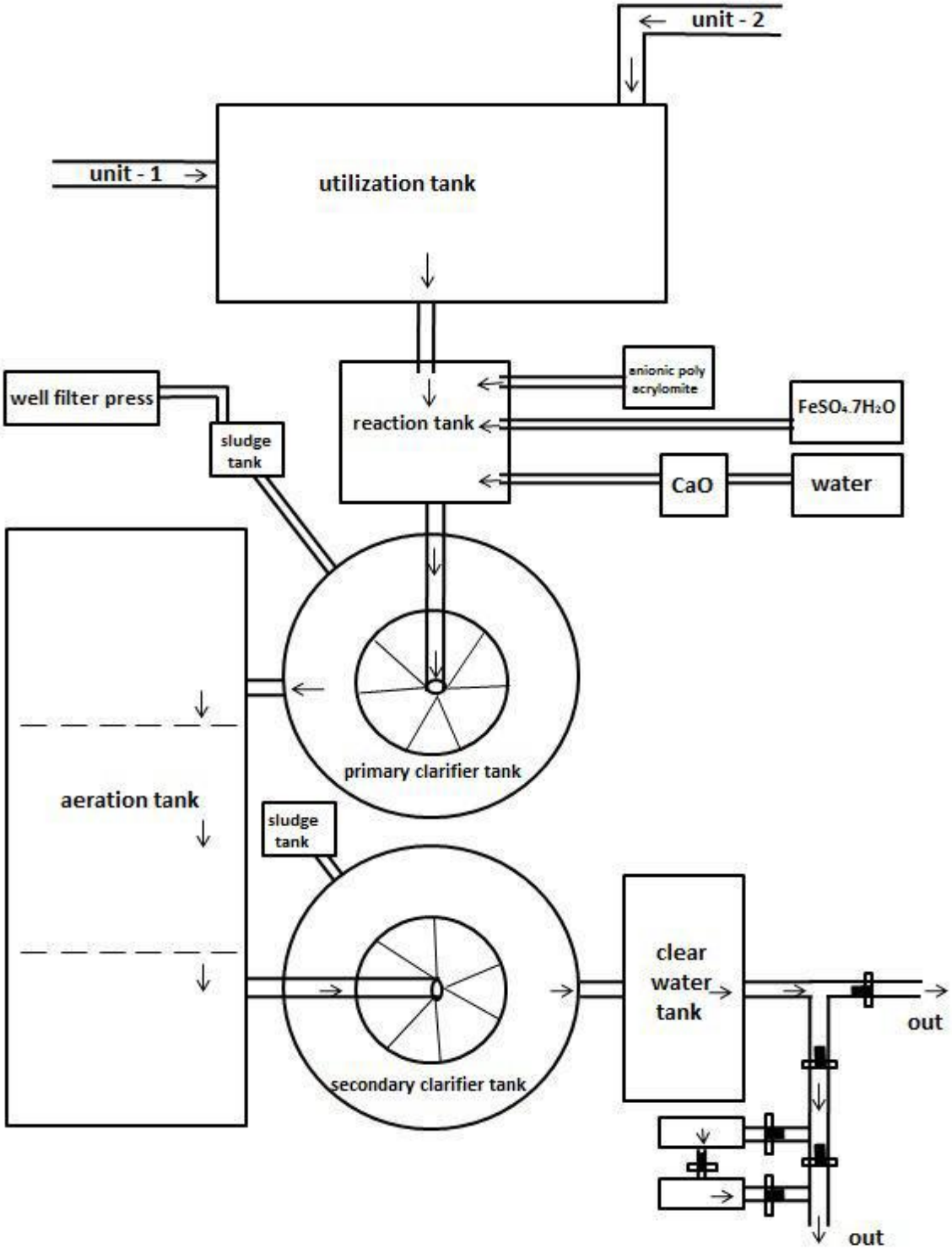


Fig: Block diagram of ETP plant in Evince Textiles Limited

Chemicals used in ETP per day

Name	Amount/day	Tk/kg
Lime (Calcium Oxide) (10% conc.)	2280 kg	8.5-9
Ferrous Sulphate Heptahydrate (10% conc.)	1080 kg	17
Anionic polyacrylamite (Catalyst) (0.1% conc.)	4 kg	300
Hydrochloric acid (10% conc.)	12 ltr	

Preparation of 10 % Solution

Lime Dissolving Tank Capacity: 2000 It.

Lime Required: 200 Kg.

FeSO4 Dissolving Tank Capacity: 2000 It.

Salt Required: 200 kg.

Catalyst Dissolving Tank Capacity: 500 It.

Polymer Required: 50 g

Sludge formation

In reaction tank required chemicals are added to the effluent coming from the equalization tank. Almost 80% sludge is produced in the primary clarifier tank. Catalyst helps to increase the weight of sludge. The remaining effluent goes to aeration tank where sludge is sedimented and here bleaching powder added for odor removal as well as HCl for pH neutralization. Then remaining water fed to secondary clarifier tank and sedimented sludge is filtered. The residual water goes to clear water tank and then sand filter which purifies the water and then carbon filter to remove heavy metal from water. Finally the pure water is drained through the discharge line.

Costing of ETP plant per liter of water

Total treating capacity per day = 110 tons (110 m^3)
= 110000 liter
Total cost per month = 24 lacs
= 2400000 taka
So, water treating cost = 2400000/ (110000×30) taka/ltr of water
= **0.72** taka/liter of water

CHAPTER 17

MAINTANANCE

MAINTENANCE

Introduction

Maintenance is one of the main concerning points for any production oriented organization. EVINCE having its own maintenance department is a strong section. It has a skilled group of maintenance manpower.

Manpower

Section	Name of Machine/Job	No of Machine	Description	Man Required per Shift	Coverage for off day, leave & absenteeism	Total
Maintenance	Mechanical	156 loom	In-charge	1	0	1
			Foreman	2	0	1
			Senior Fitter	2	4	8
			Fitter	6	4	8
			Asst. Fitter	6	4	9
			Helper	40	3+Generel shift	18

In a weaving factory, Maintenance is done mainly on Sizing machine and on looms.

MAINTENANCE OF SIZING MACHINE

Inspection at 24 hour (Cleaning Only)

Remove any lint on the suction filter for the cooling fan for the driving motors in each section.

Check any trouble and the following points:

→Abnormal noise,

→surface condition, vibration, rotation irregularity of each roll;

→Tension in each section;

→Steam, air size and oil leakage;

→Steam pressure

a. Main supply pressure

b. Supply pressure to the drying cylinder

c. Supply pressure to the sizing section.

→Air pressure

a. Main supply pressure,

b. Pressure during power failure-at the beam stand and the middle section,

c. Pressure due to the cut mark device-standard 0.3MPa.

→Steam drain exhaust

→Squeeze roll pressuring condition

After 100 hour Checking

→Exhaust drain from the air compressor and the pressure reducing valve with the filter;

→ Remove the lint from the static electricity eliminator.

1. Roll chain tension

Adjust tension with tension wheel. If the chain is slack replace it. Some check points are -

a. Sizing section: Sizing roll driving

b. Drying Section: Pre-cylinder drying and main cylinder drying.

c. Take-up section: Warp beam and doffing driving, Taking-up roll driving.

2. V-Belt Tension

Slide the motor base and the V-belt tension. Checking points are

a. Size circulation pump b. Winding motor

After 200 hour checking

1. Steam strainer cleaning

Clean the strainer two or three days after starting operation for the first time. Clean it every three months after that.

2. Take up box frame and hydraulic unit

Check the oil amount in the take up box frame and hydraulic unit. Supply if it is necessary. If oil is dirty replace it.

When the pressure difference between the primary and secondary side reaches 0.1MPa replace the element.

After 1000, 2000 & 4000 hour checking

Polish the rubber rolls in the sizing section every six months. Check the bearings.

#Tools for assembly

1. 1-ton chain block: Four sets
2. 1-ton forklift: 1 set
3. Transit and stepladder

 # Man power

A staff of four to six required to unpack, install and wire the machine.

LUBRICATION

1. **Lubrication position and required amount**

Oil or grease	Application	Quantity/unit
Multipurpose grease or EP2	Take-up gear box Sizing gear motor at 40 ◦c areas.	6.5 liters
High temperature grease	Dryer zone at 130 ◦c areas	3.0 liters
Gear oil 220	Centralized lubrication oil	15.0 liters
DTE25	Oil tank	1.0 liters

2.Recommended Oil

Manufacturer	Oil	Application
MOBIL	Mobil gear 600 xp x68	Dobby cambox, gearbox
MOBIL	Mobil gear 600 xp x100	Dobby cambox, gearbox
MOBIL	Mobil gear 600 xp x150	Dobby cambox, gearbox
MOBIL	Mobil gear 600 xp x680	Beam let-off & take-up

MAINTENANCE OF LOOM

DAILY CLEANING & INSPECTION

Routine Inspection and Maintenance

Inspection Position	Check points	Maintenance
Brake	Check for abnormally highly temperature	Adjust
Selvedge	Check for abnormal noise	Adjust to 0.2mm
Temple	Check that the temple marks do not appear	Adjust

Two week interval checking after weaving

Inspection Position	Check points	Maintenance
Whole loom	Check driving and lubrication section	Remove lint and waste yarns lubricate

Temple	Check the temple ring rotates easily and are not worn out	Remove lint and dirt, when needed replace
Heald frame	Check that the heald frame height difference is 2mm or less compared with specific value	Adjust the heald frame height
Let off	Check that yarn has not adhered to the easing shaft	Remove waste yarn
Lubrication	Grease nipples, teeth of open gears	Apply grease with brush

Monthly Inspection and Maintenance

Inspection Position	Check points	Maintenance
Thread guide	Check for dirt	Clean
Gear box of take-up and let-off Section	Check for dirt of oil	Replace
Reed	Check for adhesive monomer and abrasions	Clean, replace

Every Three month Inspection and Maintenance

Inspection Position	Check points	Maintenance
Warp beam	Check that abrasion of journal section is 0.3mm or less	
Cutter	Check the edge for sharpness	Grind or replace
Hook pin assembly	Check that abrasion is 0.5mm or less	Remove burr

Every Six month Inspection and Maintenance

Inspection Position	Check points	Maintenance
Cloth roll	Check that the roll rotates smoothly and cloth is wound	Replace the brake lining
Finger	Check for dirt	Clean

After one year total checking & maintenance

Inspection Position	Check points	Maintenance
Overhaul	Loom, Bearings, Gear ,Cams, Hook pins, Main motor, Shedding section, Let-off and take-up section, Finger	Cleaning or replacement

LUBRICATION POINTS

Position	Period
Driving Section	Gear box - 6 months Main motor -3 months
Shedding Section	Heald Frame Guide -1 week
Let off Section	Gear box-6 months Gears -After weaving
Take-up Section	Gear box -6 months Gears -6 months
Selvedge Section	Slide Gear-After weaving Bobbin Shaft-After weaving

Cutter Section	Cutter lever pin-After weaving Cutter cam-After weaving
Automation	Support Bracket-After weaving

RECOMMENDED LUBRICANTS

Manufacturer	Name
MOBIL	
MOBIL	
MOBIL	
MOBIL	Mobil DTE Oil Heavy

CHAPTER 18
MARKETING ACTIVITIES

MARKETING ACTIVITIES

Introduction

EVINCE has a strong marketing policy including a strong marketing management. It has a group of skilled manpower that looks after the strong marketing strategy.

MAN POWER OF MARKETING DEPARTMENT

General Manager
↓
Deputy General Manager
↓
Assistant General Manager
↓
Manager
↓
Deputy Manager
↓
Assistant Manager
↓
Senior executive
↓
Executive
↓
Junior Executive

Consumer of the products

The mill has a great number of renowned and international consumers. The main consumers of this factory are European country such as USA, Germany, Turkey, Italy & England. Following are
some regular consumers:

1) C&A
2) H&M
3) M&S
4) TEMA

5) LUSAKA

6) TESCO

7) CMT

8) CELLIO

9) VISION APPAREL

10) SHIRT MAKER

11) NOOR CHECK

12) BHS

IMPORTING COUNTRIES G COUNTRIES

Yarn	Size Materials	Dyes and Chemicals	Dyes and Chemicals
INDIA	INDIA	INDIA	ITALY
	THAILAND	KOREA	INDIA
		INDONESIA	CHINA
		ENGLAND	GERMANY

Duties & responsibilities of marketing officer

□□□To prepare cost sheet by dealing with the buyer.

□□□To take different steps by discussing with the high officials & merchandisers.

□□□To maintain a regular & good relationship between commercial officer & merchandisers.

□□□To maintain a regular communication with the buyer & buying houses.

□□□Communicate with the new buyers.

□□□Display the better criteria of the products.

Remarks

The marketing activities of this mill are good. The marketing & merchandising section is well organized.


CONCLUSION

CONCLUSION

The industrial training gives us the opportunity to work in mills. It is an experience of normal academic learning.

This training gives us actual picture about man, machine, material, methods and market. We have earned the direct knowledge about the raw materials, actual running condition of the machines, Workers technologist and administration.

This mill is a well-planned with enough expansion facilities. There exist a wonderful employer and worker relationship. Working environment for the labors is also good.

During our training we visited administration section, store, boiler section, generator room, compressor section etc. Everywhere we got cordial behavior from all employees.

Above all, this training for 45 days in the Evince Textiles Ltd. has given us a new experience for practical life.

Bangladesh University of Textiles has given me the field to perform the industrial attachment with Evince Textiles Ltd. This attachment seems to me as a bridge to minimize the gap between theoretical and practical knowledge. Undoubtedly, this attachment paved us the way to learn more about textile technology, industrial practices, and industrial management and production process.

Besides this attachment gave us the first opportunity to work in an Industry and acquainted us with the internal sight and sound of Textile Industries. I believe with all these, the experience of the industrial attachment will help our future life as a textile technologist.