UGC & Govt. Approved
Sonargaon University (SU)
সোনারগাঁও ইউনিভার্সিটি (এসইউ)
WE WILL RISE UP WE WILL SHINE

Sonargaon University

Department of Textile Engineering

Report On Industrial Attachment with Sahaba Yarn Ltd (Horizon Group)

5 B.K Bari, Rajendrapur, Gazipur.

Course Title : Industrial Attachment
Course Code: Tex-442

A Report submitted to the department of Textile Engineering in partial fulfillment of the credit requirement for awarding the Bachelor Degree in Textile Engineering by the **Sonargaon university**.

Advance In Wet Processing Technology

Submitted by:

Name	ID	Batch
Rashidul Islam	Tex-1703012045	12A
Md.Momen Hossain	Tex-1703012039	12A

Supervised by:

Kamrul Hassan Bhuiyan
Lecturer, & Co-Ordinator
Sonargaon University
Department of textile engineering.

Duration: From 01 March 2021 to 30 April 2021

ACKNOWLEDGEMENT

My first gratefulness goes to Almighty Allah to give me the strength and ability to complete the industrial training and this report Who has made our life more beautiful, glorious and honored.

A number of people have made significant contributions to the preparation of this report. Their insights, advice and suggestions helped us a lot. Firstly, I am very much thankful to Prof. Kamrul Hassan Bhuiyan, (Co-ordinator) SU, for his encouragement and valuable suggestions for continual improvement of the report. My Internship Supervisor who offered me to do internship in the number one industry in Bangladesh Named Sahaba Yarn ltd. I got tremendous support and guidance throughout the internship period. Working with him I have earned not only valuable knowledge but also inspired by innovativeness which helped to enrich my experience to a greater extent. His ideas and way of working is truly remarkable.

I would like to thank the Chairman, Managing Director, General Manager, Deputy General Manager, Manager, Assistant Manager, Senior Production Officer, Production Officer, Assistant Technical Officer, Technical Officer who gave us scope & helped for doing industrial attachment in the factory as well as for giving scope to work in their respective section.

I would also like to express my gratitude to Mr. Delowar Hossain (Sr. Genaral Manager), Sahaba yarn Ltd who helped us and give me his valuable time. Being involved with them we have not only earned valuable knowledge but was also inspired by their innovativeness which helped to enrich our experience to a greater extent. I believe this report could not be finished if they did not help us continuously.

I am also very much grateful to Sahaba Yarn ltd authority for giving us opportunity to do our internship work in their factory.

DECLARATION

We hereby declare that, this project has been done by under supervision of Kamrul Hasan Bhuiyan, Lecturer, Department of textile Engineering, Faculty of engineering, Sonargaon University (SU). We also declare that, neither this project nor any part of this project submitted elsewhere for award of any degree.

.....

RASHIDUL ISLAM

TEX-1703012045

.....

MD. MOMEN HOSSAIN

TEX-1703012039

Submission Date: June, 2021

Letter of Approval

June, 2021
The Head
Department of Textile Engineering
Sonargaon University (SU),
146 Mohakhali, Dhaka 1212

Subject: Approval of Industrial Attachment Report of B.Sc. in Textile Engineering Program.

Dear Sir,

We are just writing to let you know that this Industrial Attachment in **Sahaba Yarn Ltd**.**(Horizon Group)** has been prepared by the student bearing Tex-1703012045 **&** bearing Tex-1703012039 is completed for final evaluation. The whole report is prepared based on the proper investigation and information in **Sahaba Yarn Ltd**. **(Horizon Group)** The student were directly involved in their industrial attachment report activities.

Therefore it will highly be appreciated if you kindly accept this industrial attachment report and consider it for
final evaluation.

Yours Sincerely

.....

Kamrul Hassan Bhuiyan
Coordinator
Department of Textile Engineering
Sonargaon University (SU)

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Finally I want to give thanks for all the workers, supervisors who have assisted, helped & inspired us to complete this report

INTRODUCTION

The word “textile” originally applied only to woven fabrics, now generally applied to fibers, yarns, or products made of fibers, yarns, or fabrics. The term textile originates from the Latin verb texere, meaning “to weave”. It has, however, come to include fabrics produced by other methods. Thus, threads, cords, ropes, braids, lace, embroidery, nets, and fabrics made by weaving, knitting, bonding, felting, or tufting are textiles. Some definitions of the term textile would also include those products obtained by the papermaking principle that have many of the properties associated with conventional fabrics. In addition to clothing and home furnishings, textiles are used for such industrial products as filters to air conditioners, life rafts, convey or belts, tents, automobile tires, swimming pools, safety helmets and mine ventilators.

At Sahaba Yarn LTD., cutting-edge technologies merge seamlessly with human ingenuity and deep seat recommitment to ensure excellence in every stage and are another activities. From fiber to fabric, Sahaba yarn LTD is truly integrated undertaking. The Sahaba Yarn LTD. has the capability to offer a complete product range for the export textile markets. The goal of Sahaba Yarn LTD. is to become the preferred partner for sourcing high quality fabrics and clothing from Bangladesh with highly advanced technology and an emphasis on developing local human resources. Sahaba Yarn LTD has the potential to make an important contribution to the nation's growing ready- made garments export sector

PROJECT DESCRIPTION
Sahaba Yarn Ltd
(Horizon Group)

General Information about the Factory:

Name of the Company	**Sahaba Yarn Ltd.**
Type	100 % Export Oriented Composite knitwear Industry
Factory Address:	Bishuya , Kuribari,Mirzapur Union,Ghazipur
Contact No	28961911
E-mail Address	**info@textilehorizon.com**
Person to becontact	Mir Mobasher Ali (Managing Director)
Year of Establishment	2006
Business	100% export oriented knit fabrics manufacture & readymade knit garments exporter
Products	Knit Fabrics & Knit Garments
Production capacity	Knitting: 30 tons/day Dyeing & Finishing: 15 tons/day
No. Of employees	120
No. Of workers	3000
Legal Form of Company	Private Limited Company.

VISION OF SAHABA YARN LIMITED

In the global marketing, ever-changing fashion world Sahaba Yarn Ltd considers its prime mission to suit every new taste, whim and demand of Customers from around the world and all strains of human culture.

Sahaba yarn ltd acts on the basic premise that “fashion is an exploration into the images people seek to convey – about themselves and the way they live.”

So, in dealing with its target consumers, KCL mainly aims to know their perception about themselves and translates those into garments. Doing that, over the years, KCL designers have acquired an almost telepathic understanding of the consumers’ needs.

SYL has started manufacture and export garments since late 2014. Its mission is to produce the latest design; quality knit fabrics and apparels for international markets.

SYL is one of the few elite private sector business groups, which contributed wealth as well as welfare to the struggling economy of Bangladesh. As time is essential to space so is taste to its products. The secret is love – which, paired with meticulous efficacy and a keen sensitivity to style, makes SYL an emerging brand destined to light up the horizon of fashion.

SYL has team of skilled and dedicated technocrats backed by adequate number of modern USA and European machinery and equipment’s to match international standard of all kinds of knitwear products.

HISTORY OF SAHABA YARN LIMITED

Sahaba Yarn Limited home base is Gazipur- a city with the river of Turag. It launched i very humble journey in 2006 from a rented building at Na B.K Bari. That potential embryo, by virtue of futuristic enterprising, dedication to quality, commitment to excellence, adoption of state-of-the-art technology, and keen focus on customers' satisfaction, it could very rapidly metamorphose into a large corporate entity, in its most modern sense.

Its production has branched out into four full-fledged factories at three location- B.K Bari, Gazipur in Dhaka. Sahaba Yarn Limited at present has a daily production capacity of over 30 ton of knitted fabric, 15 tons of dyed fabric and 30,000 pieces of garments.

Knit Concern Limited became one of the few garments in Bangladesh that implemented ISO 9001:2000 Quality Management System. The government of Bangladesh also recognized its excellence by awarding the status of a Md. Mobasher Ali the founder Managing Director of SYL, since 2006 without break.

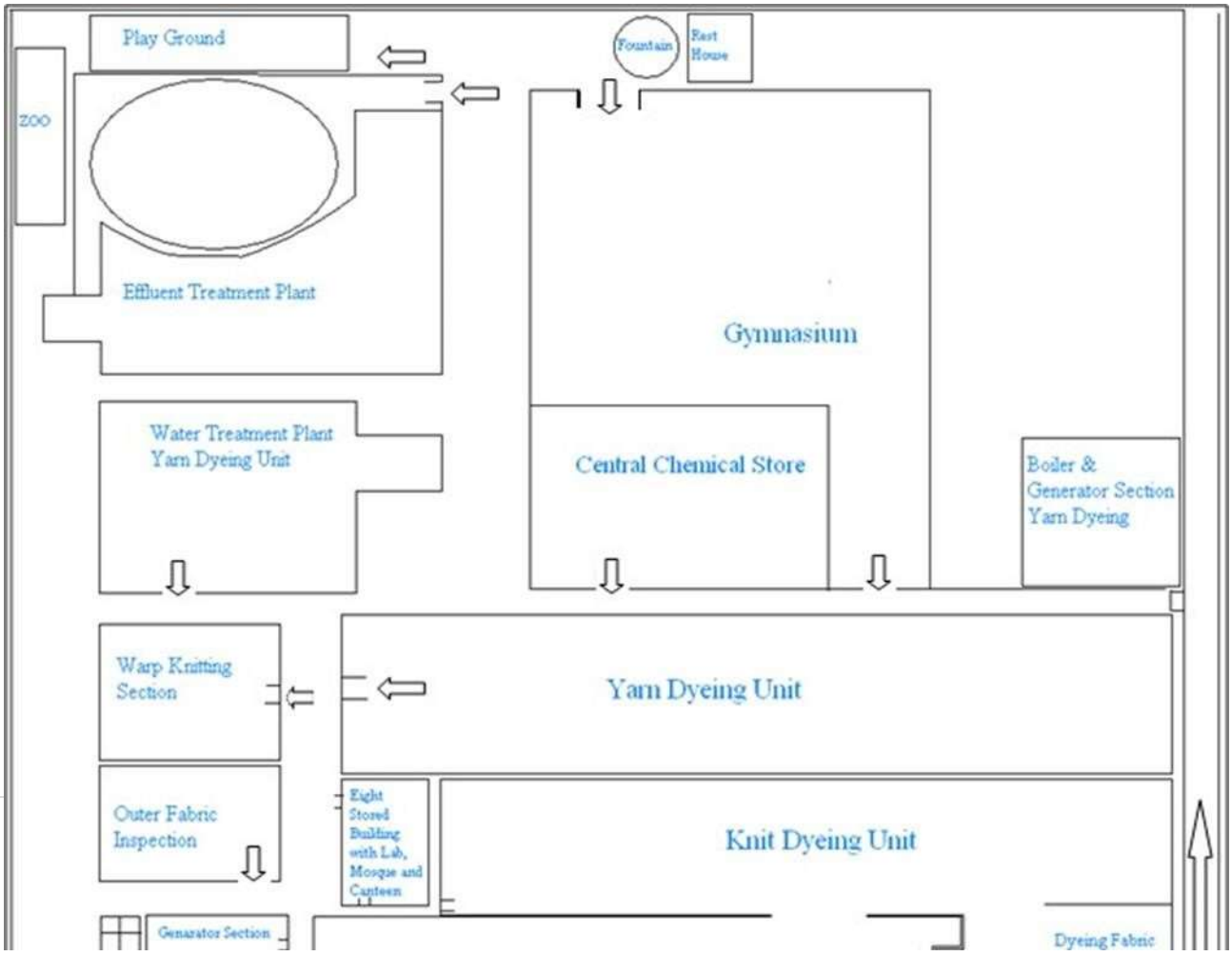
Project Cost:

Project Area:

1000 core Taka (Approximately).

approx. 82000 sq. ft.

Project Layout



Physical Infra-structure:

Within Only a Decade, by hyper-growth has been transformed into a futuristic entrepreneurial saga. Its production has branched out into four full-fledged factories at location-B.K Bari, Gazipur

Product Mix:

- 100 % cotton
- CVC (Chief Value Cotton) (60/40)
- Grey melange
* 5 % Viscose & 95% Cotton
* 10 % Viscose & 90% Cotton
* 15 % Viscose & 85 % Cotton
- Ecru melange (2%)
- Camel melange (1%, 2%)
- PC (52/48, 60/40, 65/35, 80/20)

- Sewing thread.

Product Range:

- Men
- Women

Knit Dyeing Section:

It has one section of knit dyeing floor. Each contains around 100 thousands square Feet area.

Production Capacity: Approximately 15 ton/day

Yarn dyeing section:

AREA: 100 thousands sq. fit.
Floor: MULTI-STORED FLOOR (25,000 sq.ft/floor).

PRODUCTION: 12 Tons/day (Approximately). It has two lifts, two cranes of capacity = 12 tons. There is a Bas Bar (have no wire) system to facilitate production.

Different Departments:

Production Oriented Department:

- Yarn store
- Planning & Control
- Batching
- Chemical store
- Winding section
- Dyeing Section
- Finishing Section
- Dyeing lab section
- Wet lab
- Quality Control
- Maintenance
- Utility
- Water treatment plant
- Effluent treatment plant

Supporting department:

- Procurement
- Merchandising
- Marketing
- IT
- HRD
- Finance & accounting
- Medical
- Personnel Administration
- Securit

Other Facilities:

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

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

Medical
Available Facilities with a Air Conditioned Ambulance.

Lighting:
Sufficient lighting arrangement is there with proper lighting shade fixed along with overhead channel

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

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

Toilet:

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

Emergency Electricity Supply:

During the electricity failure, available generators can fulfill requirement of the whole complex.

Salary & Wages:

- Salary and wages are paid to the staff and workers as per gazette notification of the government of Bangladesh.
- Payment of salary and wages are made regularly by 5th - 7th of each month
- In the salary sheet basic salary, house rent, medical allowance and gross salary are shown separately for each employee.

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ACHIEVEMENT

Sahaba Yarn Ltd now is having Oeko Sustainable Textile, i.e., Oeko-Tex Standard 100, which, as you know, entrusts it to produce apparels using organic cottons cultivated and traded conforming to eco-friendly standards all through. Sahaba Yarn ltd is also certified by CONTROL UNION.INDIA to manufacture garments using organic cotton yarn under the prestigious coverage of scope CERTIFICATE.

On May 1, 2010, the Ministry of Labor, Government of Bangladesh, has honored Knit Concern with the May Day Award 2010 for the top order ranking as a labor friendly knit factory in the country.

Besides numerous local and overseas top order business as well as CSR awards and recognitions, many of those - such as the 'Premium Quality Supplier' etc - being offered by its valued buyers and some business and financial publication houses highly noted in the country, the government also has awarded Knit Concern the national trophies several times for performing as the top and the best exporter of knit apparels.

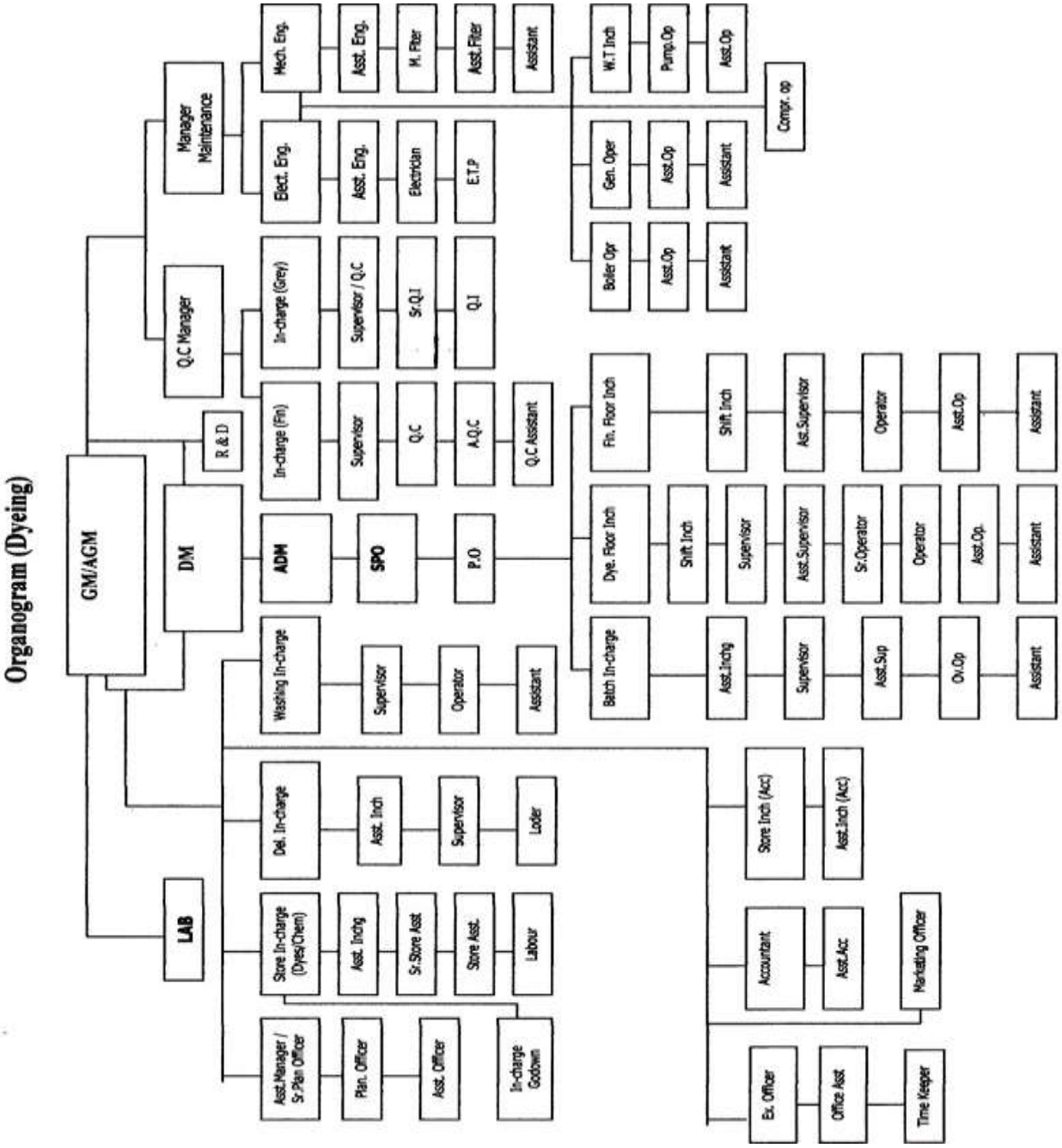
BGMEA	
BKMEA	
OEKO-TEX	

List of Major Buyers:

Buyers Name	Sign
H & M	
Okaidi	
Jules	
CAMAIEU	
KLiNGEL	

HUMAN RESOURCES OF MANAGEMENT

Organogram of man power in Dyeing Section



MANAGEMENT OF SYSTEM

- Buyer sample is send to G.M.
- Matching is done by lab in charge.
- Sample is prepared by asst. dyeing master.
- Sample is send to the buyer for approval.
- Approved sample is returned and taken as standard. Sample for bulk production.
- Asst. dyeing master gives responsibilities to production officer.
- Then production officer, with the supervisors start bulk production.
- On line and off line quality check is done by lab in charge and asst. dyeing master.
- After dyeing finishing in charge controls the finishing process with the supervision of production officer.
- After finishing, the material is checked by asst. dyeing master.
- Finally G.M. checks the result with asst. dyeing master and decision is taken for delivery.

SHIFT CHANGE:

Two shifts (day and night):
each of 12 hrs. Day shift→ 8 a.m. to 8 p.m.
Night shift→ 8 p.m. to 8 a.m.

Responsibility of Production officers:

- To give dyeing program slip.
- To match production sample with target shade.
- To collect production sample lot sample matching next production,
- To observe dyed fabric during finishing running & also after finishing.

- To identity disputed fabrics & report to P.M/G.M. for necessary actions.
- To discuss with P.M about overall production if necessary.
- To sign the store requisition & delivery challan in the absence of P.M.
- Also to execute overall floorworks.
- To maintain loading'/unloading khata.
- Any

Title : Production Office
Report To : Sr. Production Officer.
Job Summary : To plan, execute & follows up the production activities &. Control the quality production with related activities.

Duties & Responsibilities of SPO:

- Overall supervision of dyeing, finishing
- production. Batch preparation & p^H I check.
- Dyes & chemical requisition issue & check.
- Write Fabrics loading & unloading time
- from m/c Program making, sample checking, color measurement
- Control the supervisors, operator, asst. operator and
- helper of Dyeing m/c.
- Andalso anyother overworkas & whenrequired by the management.

Title : Sr. Production Officer
Report To : Manager
Job Summary : To plan execute & follows up the production activities & control the quality production with related activities.

1. Duties & Responsibilities of GM:

- Overall supervision of dyeing, finishing production.
- Checks the sensitive parameters of different machine for smooth dyeing
- Checks the different log books of different areas & report to management
- Checks out the plan to control the best output from supervisors & workers.
- To trained up& motive the subordinates how to improve the quality production.
- Control the supervisor, operator, Asset. Operator & helper of dyeing.

Maintenance of machine & equipment any other works & whenrequired by the management

Manpower List (Dyeing Department)

No.	Section	Person
01	GM	01
02	DM	01
03	DDM	01
04	SPO	01
05	P.O	08
06	Planning	02
07	Q.C / Q.I	20
08	Maintenance	30
09	Batch	20
10	Dyeing	149
11	Finishing	139
12	Store	26
13	Delivery	29
14	Washing	26
15	Accounts	03
16	Marketing	02
17	Store (Acc)	02
18	Ex.Of./'Time	04
19	Pion	04
	Total	468

FLOW OF OPERATION

Knitted fabric from Knitting Grey Fabric Inspection Section Batch

↓

Section

↓

Dyeing Laboratory Dyeing Floor Finishing Section Quality

↓

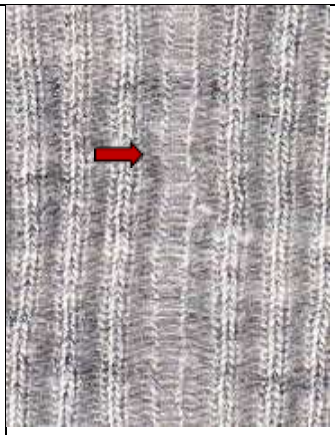
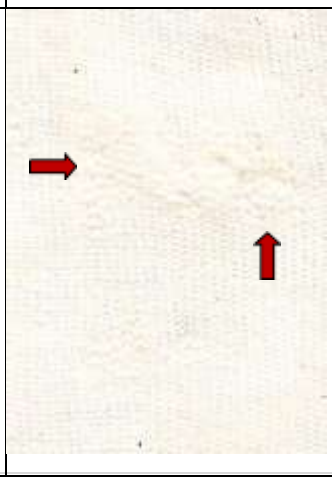
Checking Dispatch/ Delivery Section

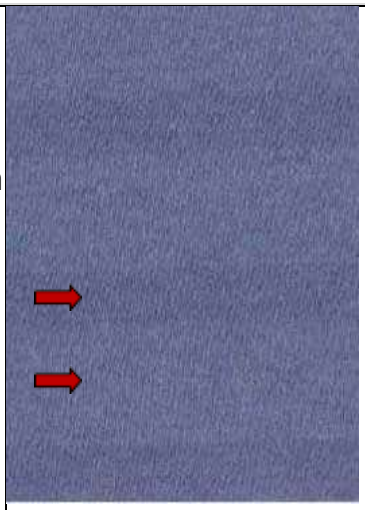
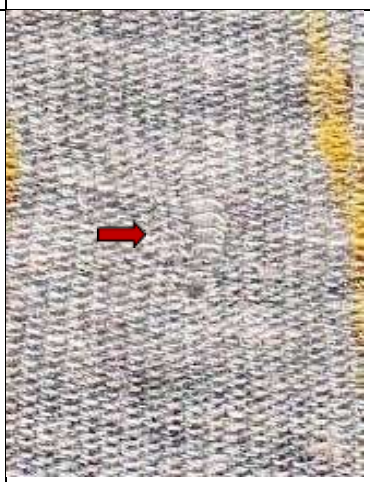
Supporting sections:

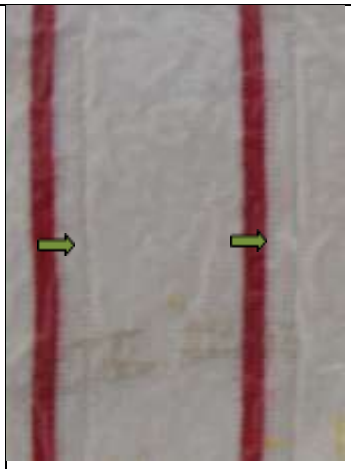
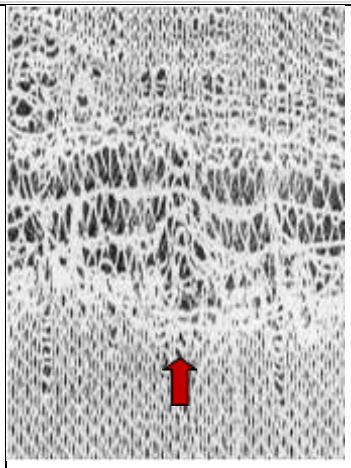
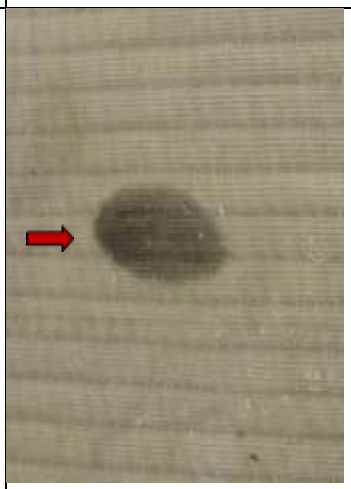
- Planning
- Chemical store
- Utilities Sections– water, power, boiler, compressor, waste water management system.
- Maintenance Section

GREY FABRIC INSPECTION

Grey Fabric Inspection Section:

Fault name	Causes	Remedies	Image
1. Hole Mark	# Yarn breakage or yarn cracks. # If the yarn count is not correct on regarding structure, gauge, course and density. # Badly knot or splicing. # Yarn feeder badly set. # If yarn tension too high	#Yarn strength must be sufficient to withstand the stretch as well as uniform. #Use proper count of yarn. #Correctly set of yarn feeder. #Knot should be given properly	
2. Needle Mark	# When a needle breaks down. # If a needle or needle hook is slightly bends . #If needle does not catch yarn .	# Needle should be straight aswell as from broken latch.	
3.Star Mark:	# Yarn tension variation during production. # Buckling of the needle latch. # Low G.S.M fabric production	#Maintain same Yarn tension during production. # Use good conditioned needles.	

4.Drop Stitches	# Defective needle. # If yarn is not properly fed duringloop formation i.e. not properly laid on to the needle hook. # Take-down mechanism too loose. # Insufficient yarn tension. # Badly set yarn feeder.	#Needle should be straight & well. # Proper feeding of yarn during loop formation. # Correct take up of the fabric & correct fabric tension. # Yarn tension should be properly.	
5.Bariness	# Use of irregular yarn having higher long term irregularities. # Usingdifferent count thread.	# remove irregular yarn # use proper yarn count #we can use it for white fabric	
6.Loop	# If needle latch is hard or curve. # if yarn tension is loose .	#cleanorchange the needle. # set proper yarn tension	

7.Lycra out	Causeby Iflycraismissed or Lycra attach with the yarn	Checkthefeeder and attatch laycra.	
8.Seat up (cloth fallout)	# if needle latch is not work properly/jaum # Causesby thick yarn # Improper/large knot	Make sure all the latches of needle are closed with feeding yarn after a drop stitch.	
9.Oil mark	# Excessive oil flow in the needle # Leakage of oil line	# Ensure that oil does not pass on the fabrics. # Well maintenance as well as proper oiling.	

10.Fly	In knitting section too much lint is flying to and fro that are created from yarn due to low twist as well asyarn friction. This lint may adhere or attaches to the fabric surface tightly during knit fabric production.	# Blowing air for cleaning and different parts after a certain period of time. # By cleaning the floor continuously. # By using ducting system for cleaning too much lint in the floor. # Over all ensure that lint does not attach to the fabric	
11.Yarn contamination	# If yarn contains foreign fiber then it remains in the fabric even after finishing, # If lot, count mixing occurs	# By avoiding lot, count mixing. # Fault less spinning.	
12.Sinker Mark	# When sinker corrode due to abrasion then sometimescannotholda new loop as a result sinker markcomes. # If sinkerhead bendthen sinker markcomes	Sinkershouldbe changed	

Inspection Machine Specification:

- UZU machine forgarment
- Width: 69 & 100 inch
- No of m/c: large – 3 small – 6
- Powersupplyrequired: 200 volt 50/60 Hz
- Motor- 1 hp.
- Efficiency – 75%
- Brand Name :UZU
- Model: HC-TIM -1500 mm
- Country Of Origin : Thailand
- No of motor: 02
- Motor: 210 HP
- Power : 220 V

Checking Standard:

Varies depending on buyers' requirements

- For H&M – 4 point system is followed.
- For others – 10 point system is followed.

Inspected Fabric Storage Section:

- Two storied storage sections with racks of multistoried rails.
- Total capacity – approx. 250 tons
- Storage fabrics are sorted and separated under following parameters----

1. Buyer
2. Order no
3. Color
4. Count
5. Brand
6. Yarn lot
7. Fabric Dia & GSM.

BATCH SECTION

Batching:

Batching means separation of fabric according to specification, Dyeing machine capacity & availability, urgency of the order.

Two types of Batching:

1. Solid
2. Assorted

Batch contains body of garments as well as collar-cuffs according to the design.

- Batch Quantity = $\frac{\text{Total required quantity X Dia Quantity}}{\text{Total quantity}}$

- Batch Ratio = $\frac{\text{Total batch quantity + total parts Batch Quantity}}{\text{Quantity}}$

M/C for Batch preparation

Name : Turning m/c
Brand Name : PUJI
Type : REVERSING
No. of m/c : 03

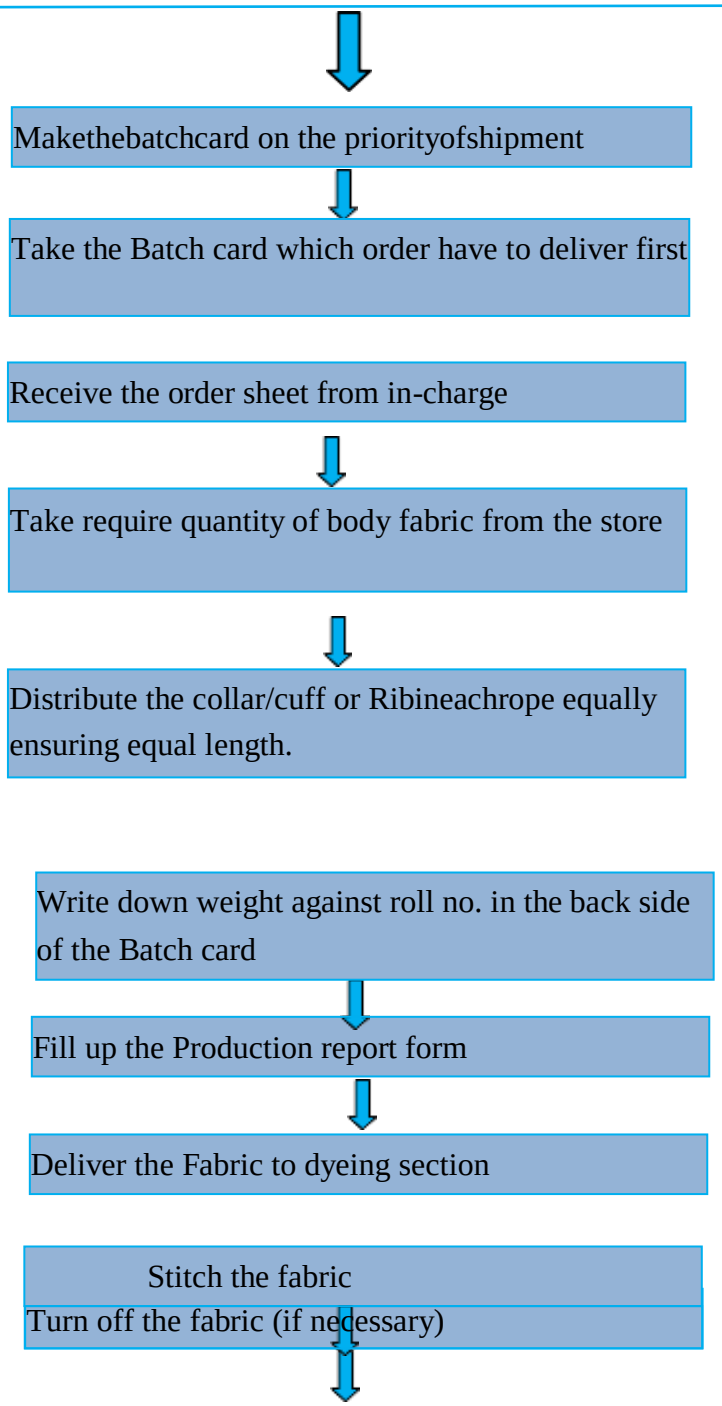
Loading Capacity:

In dyeing machine, 250 kgs of fabric can be one nozzle through dyeing machine. Normally, for the fabric with high G.S.M and large width, maximum load can be done.

Nozzle: Each batch is divided into 1-4 stacks, which are termed as nozzle, generally each nozzle weight 250 kgs

Rolls: Each nozzle is further dividedinto1to5, which are termed as rolls. Usually each roll weight about 22-27 kgs(or up)

Process flow chart of Batch preparation:



KNITDYEING LABORATORY

Sahaba Yarn has a '**Central Lab**' including three major sections– Knit- Dyeing lab, Yarn- Dyeing lab & Physical Lab.

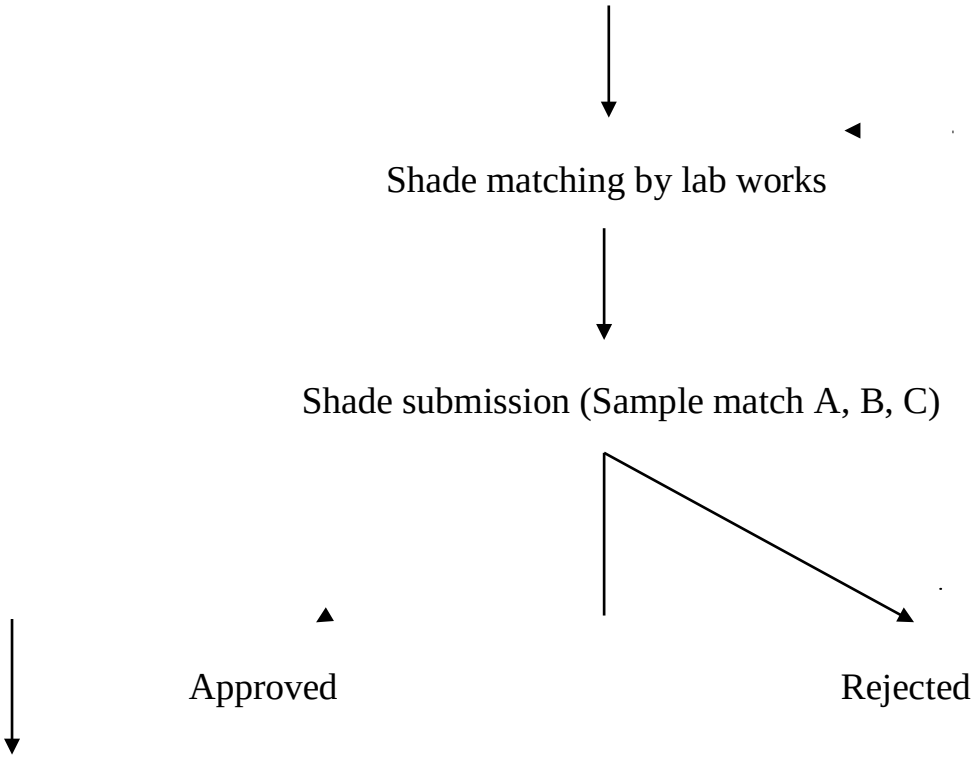
Main Responsibility:

- Accepting the 'Swatch' from the buyer and analyze the color & Dyes.
- Preparing the Recipe accurately matching the required color.
- Storing & maintain the dyes to be used for dyeing.
- Producing self-shades & storing it into the computer.
- Record & analysis of chemicals & dyes quality.
- Making plans for bulk dyeing.
- Following the color coding system given by the distinctive buyer & also prepare own colorbank.
- Testing the dyed goods.

1. **Flow of work:**

Swatch from buyer/merchandiser

(Contains: fabric construction-gsm-color name-color code-style)



Shade matching system:

Spectrophotometer:

Spectrophotometers designed specifically for the measurement of colored materials, are at center of any modern color formulation, color production, or color quality control system. Although these color spectrophotometers are designed measure samples both accurately & repeatedly, they accomplish these measurements only within a range of applicable tolerances. Spectrophotometers are not perfect measuring devices, & how well they measure often depend on factors under control of system operator. The objective is how to better operate and control color spectrophotometers, so that their measurements are as accurate & repeatable as possible. These tips are intended for those attempting to get the best possible measurement performance from their color measuring spectrophotometer

The Data color high performance bench top spectrophotometers (Data color650™, Data color 600™, Data color 400™) are the newest generation of bench top color measuring instruments, incorporating state-of-the-art CMOS integrated circuit technology in the instrument design. All are intended for use as a device for measuring, specifying and evaluating color in both laboratory and production settings.

[Spectrophotometer – Data color model 600]

This high-precision, close-tolerance, reference grade spectrophotometer has special capabilities to handle fluorescent materials.

- Automated zoom lens and specular port
- Exceptional inter-instrument agreement
- Automated UV control
- Multiple viewing apertures with automatic aperture recognition Automatic gloss compensation

Pantone book:

Buyer's Swatch: may be piece of fabric or C.I. number of any specified **'Pantone book**

- There are 4 types of pantone book is available:
    1. TP ---- textile paper
    2. TC ---- textile cotton
    3. TPX – textile paper for bright
    4. TCX -- textile cotton for bright
- The given swatch is measured by the 'Spectrophotometer', which is prepared by reach memory of different dyestuff self-shades.
- Also the matching may be done by previous working record.

Some self-shade samples:

Dyechufix Yellow HS-3R:

0.01% 0.05% 0.1% 0.5% 1% 2% 3% 4% 5%

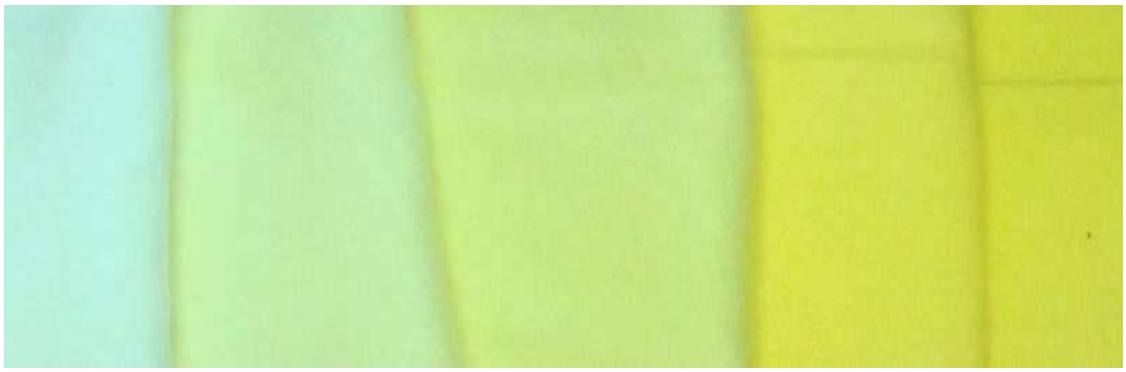
Amron Red HR2D

0.01% 0.05% 0.1% 0.5% 1% 2% 3% 4% 5%

EV Blue SP. EBR

0.1% 0.5% 1% 2% 3%

- Reactive Yellow 4GL



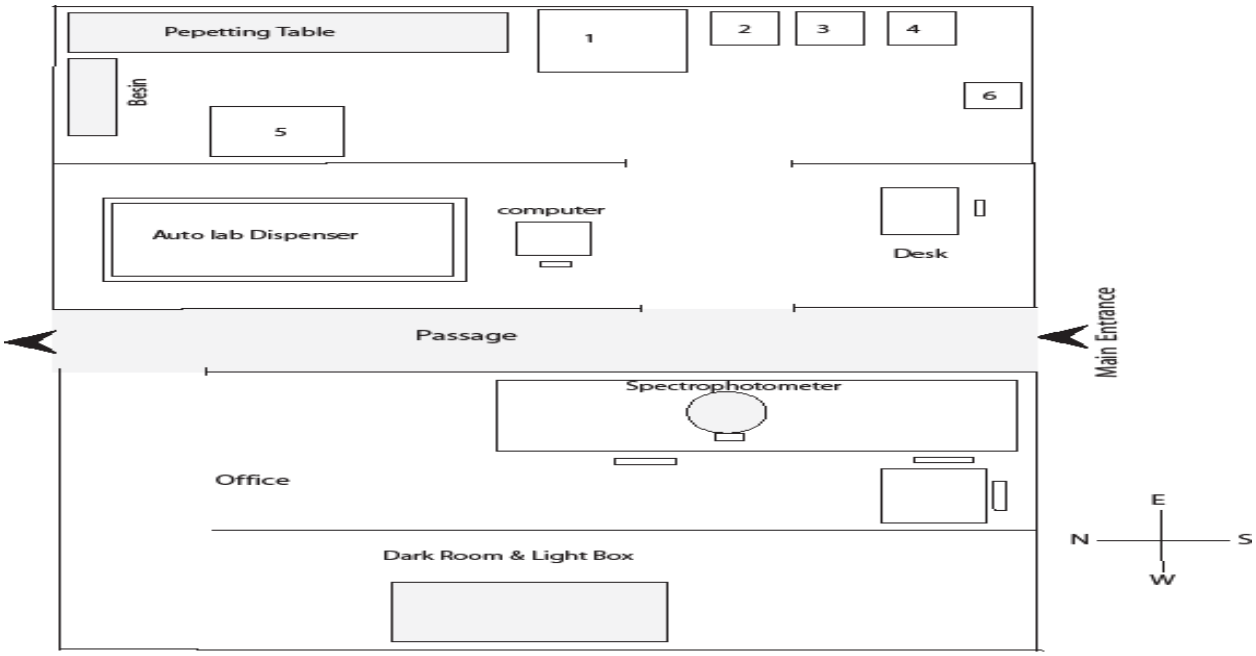
0.1% 0.5% 1.0% 2% 3%

List of machine:

Auto lab Dispenser & Solution maker	01
Ahiba Nuance-(Sample Dyeing m/c)	01
Sand lab sample d/m	04

Lab Extractor	01
Dryer	01
Data color Spectrophotometer SF 600 Plus CT	01
Incubator (Oven)	01

- <u>Lay out of Knit-Dyeing Lab:</u>



1-5 : Ahiba nuence Sample dyeing m/c
6 :Lab hydro

1. Lab Dyeing Machine:

AHIBA NUANCE Data color lab dyeing machine

Feature:

- Easy to operate multi-step controller with alpha-numeric program names
- Advanced microprocessor technology controls the heating and cooling system
- Dyeing parameters are constantly monitored during every step of the dyeing process and displayed on the large graphical display
- Memory cards store an unlimited number of processes
- Increased power output ensures reproducible level dyeing
- Suitable for allsubstrate.

AUTO LAB DISPENSER

SPECIFICATION:

Manufacturer:
Data Color
Origin: USA

FUNCTION:

- Preparation of stock solution
- Auto dispensing of given recipe

LAB DIP:

Lab dip is a process by which buyers supplied swatch is matched with the varying dyes percentage in the laboratory with The help of "DATACOLOR" or see the previous matching sample or give the recipe by the practical experience, Lab dip plays an important role in shade matching & and detaching the character is tics of the dyes and chemicals are to be used in the large scale of production so this is an important task before bulk production.

Key accessories for Lab:

❖ Data color computer ❖ Lab, receive file ❖ Electronic Blench ❖ Plastic/Glass beakers ❖ Steel stirrer	❖ Scissors ❖ Stainless reference & dyeing beakers ❖ Dryer ❖ Variable light box ❖ Electric Heater

DYEING MACHINE

DESCRIPTION AND THEIR MECHANISM OF WORKING

DYEING FLOOR

The Dyeing Machines are all **Winch dyeing m/c** of both atmospheric & high temperature types.

No. of Machines:

Type	capacity	no. of m/c
Sample dyeing machine –	20 kg	9
	20 kg	10
	25 kg	11
	25 kg	12
	50 kg	13
Bulk dyeing machine -	150 kg	8
	250 kg	7
	500 kg	6
	500 kg	5
	750 kg	4
	750 kg	3
	900 kg	2
	1000 kg	1


MCS

1. MECHANISM OF DYEING MACHINE:

Main Parts of Dyeing Machine:

1. Main Vessel or Chamber
2. Winch roller or Reel
3. Heat Exchanger
4. Nozzle
5. Reserve Tank
6. Chemical dosing tank
7. Utility lines i.e. water line, drain line, steam inlet etc.
8. Controlling unit or Processor
9. Fabric Plaiter
10. Different types of motors & Valves

Working Principle of Winch dyeing machine:

Winch Dyeing machines are most suitable for knit fabric dyeing. Here fabric is dyed in tubular from where fabric runs in endless circular path. Inside the m/c theupper part of the fabric runs through a nozzle & the lower part is immersed into liquor, in the nozzle the liquor is sprayed onto the fabric. The fabric and liquor both circulated by a high pressure pump.

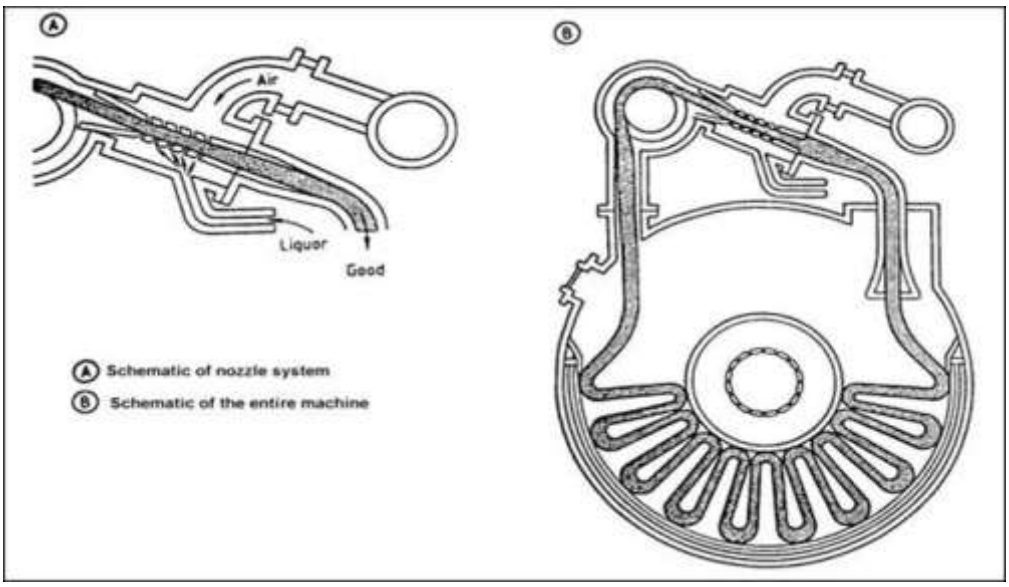


Fig: cross-sectional diagram showing fabric path & nozzle in the high pressure winch d/m

The main pump draws the liquor from the bottom of the vessel & passed this liquor through the heat exchanger to the top of vessel into the Nozzle. The winch roller or the reel also helps running the fabric smoothly. The liquor gets heated or cooled by exchanging temperature in the heat- exchanger.

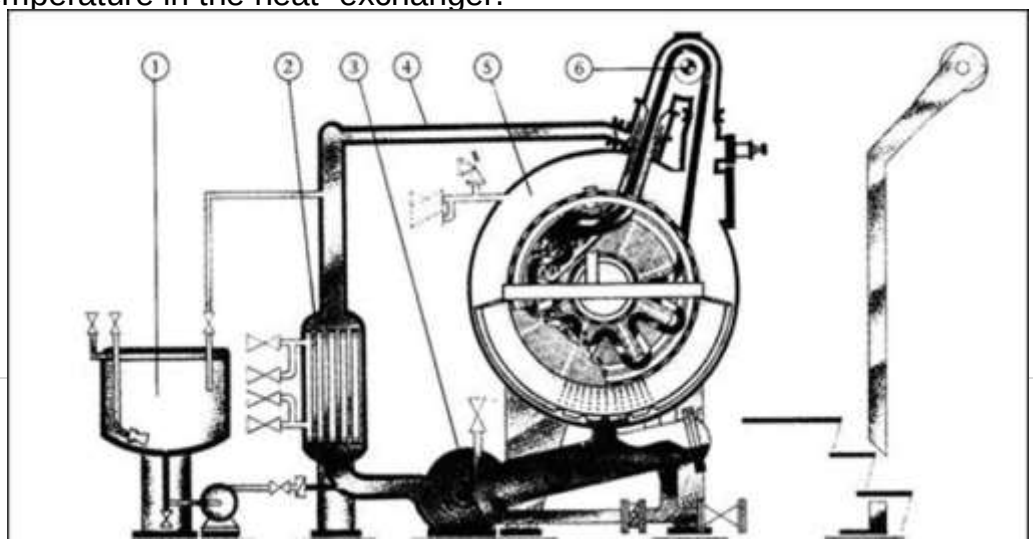


Fig: schematic diagram of the circulation system of liquor in a dyeing machine

General Parameters of Dyeing machines:

- Capacity per nozzle: theoretically 250 kg but practically not more than 200 kg should be used.
- Nozzle pressure: 4-6psi
- Steam pressure: 7 bar (inlet of heat exchanger)
- Cold water temp.
- & pressure: 25 c & 3 bar
- Maximum temp.: 140 for high temp. M/c 100 for atmospheric
- Reel/Winch speed: 150-250 rpm
- Main motor efficiency: 80-85%

FINISHING SECTION

Textile finishing, in are stricted sense, is the term used for a series of processes to which all bleached, dyed, printed & certain greige fabrics are subjected before they are put to market. It's one of the most important operation in knit processing.

Objectives of Finishing:

-Improving the appearance, luster, whiteness etc.
-Improving the feel, which depends on the handle of the material & its softness, suppleness, fullness etc.
-Wearing qualities, non- soiling, anti crease, ant shrink comfort etc.
-Special properties required for particular uses -water -proofing flame proofing etc.
.
-Covering of the faults in the original cloth.
-Increasing the weight of the cloth.

Effects of Finishing

-Easy care .
-Crease recovery.
-Dimensional stability
-Good abrasion resistance
-Improved tear strength
-Good sew ability
- Soft or stiff handle
-Shine or luster

Knit fabrics require finishing process after dyeing. During dyeing all knit fabrics are dyed in tubular form. According to buyers requirement dyed fabrics are finished in either Tubular form or Open-width form.
Depending on which Finishing sections are separated into two sections – OPEN & TUBE section

Open-finish Section:

Those fabrics which are to be cut in open form in garment section as per buyer requirement are finished in open form in this section.

The flow of process is as follows

Hydro extractor slitting & dewatering

↓

Stenter

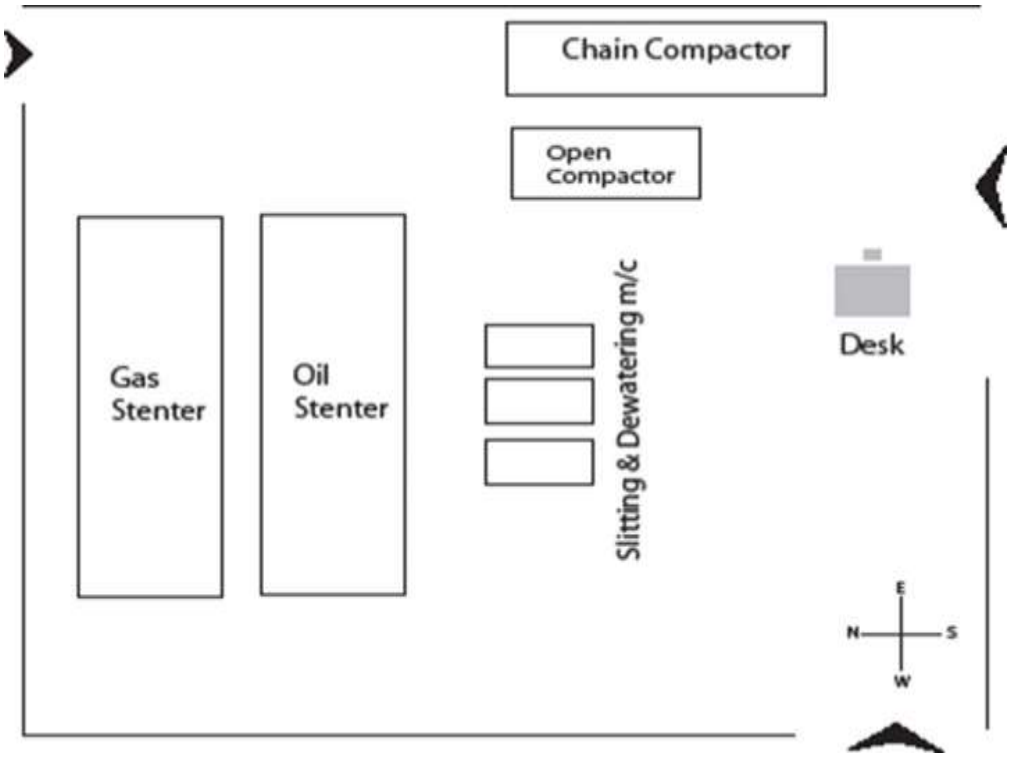
↓

Compactor Q.C

↓

Delivery

1. Layout of Open-Finish Section



Tubular Fabric Finish Section:

Tubular fabrics are generally used for Ladies wear& Baby dress. In KCL huge orders of tubular product are manufactured.
The Machines or Finishing Sequence for Tube-Finishing are as

following – Hydro extractor Dryer

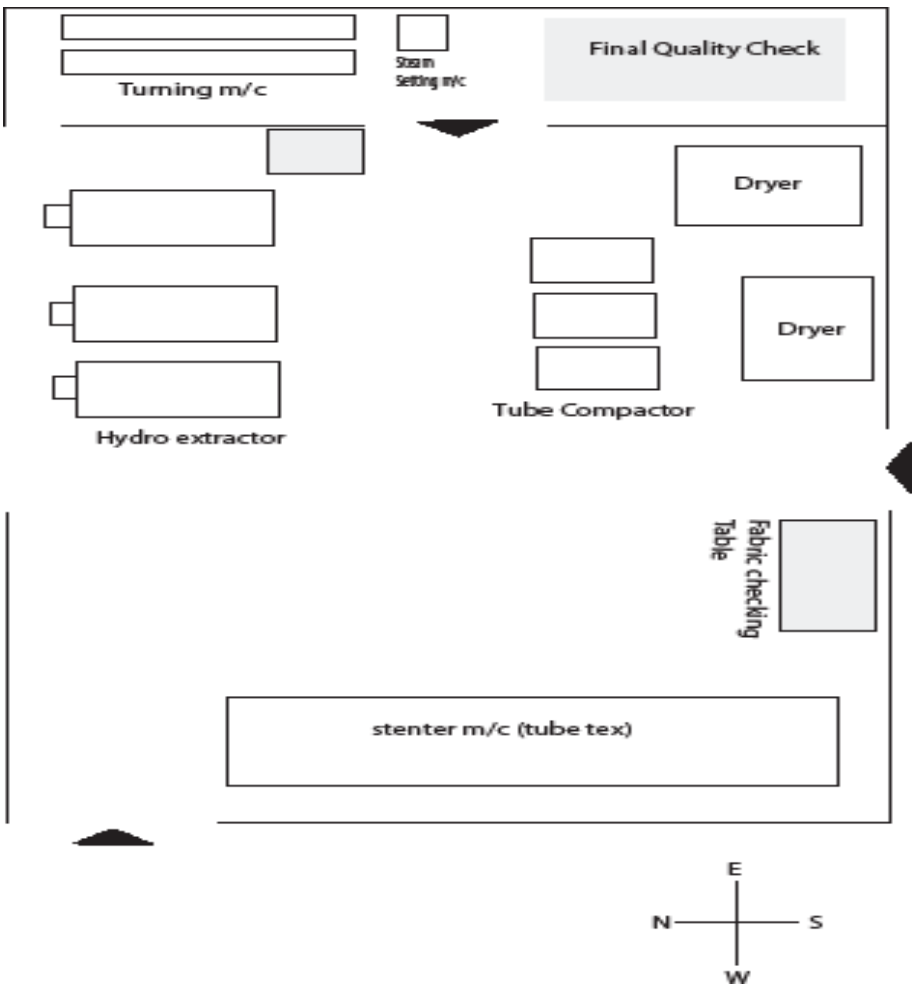
↓

Turning m/c

↓

Plaiting m/c or Steam setting m/c Tube Compactor

↓



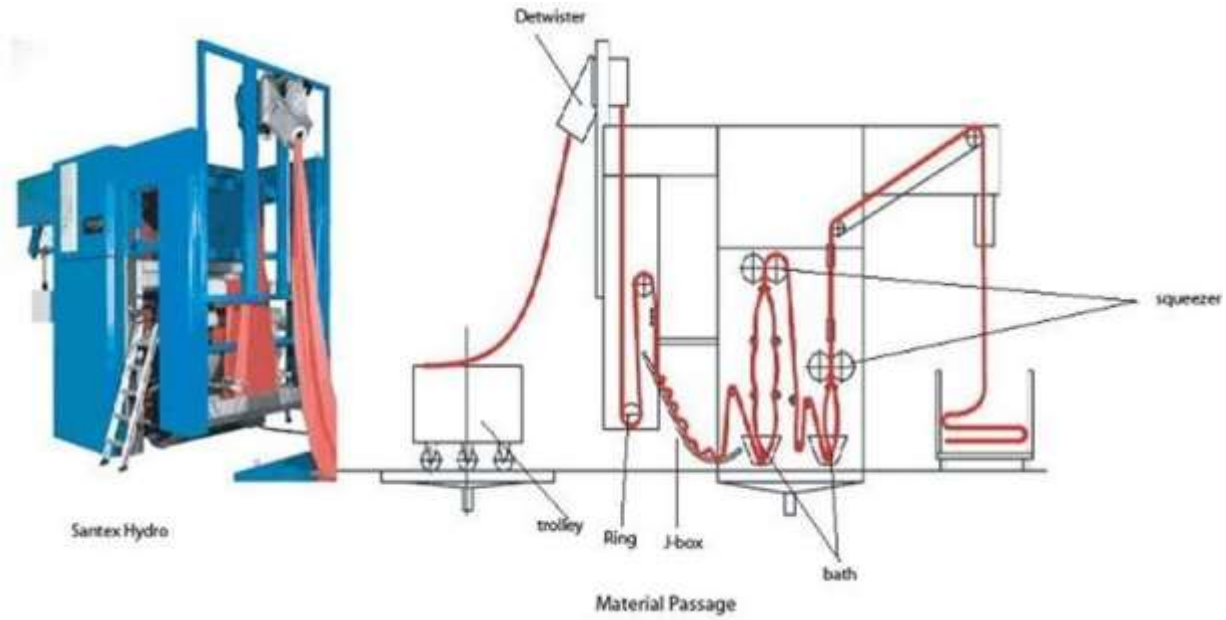
1. Layout of Tube-Finish Section Description of Different Finishing Machines

HYDRO-EXTRACTOR-PADDER

Manufacturer	:	SANTEX, SWITZERLAND
No. of m/c	:	2
Manufacturer	:	BIANCO, ITALY
No. of m/c	:	1

4. Function:

- To remove the excess water inherited by the fabric during Dyeing.
- To clean any unnecessary dirt or hairs of fibers.
- To soften the fabric if required by using softening agent.
- Slight controlling of Dia of tube fabric by using 'Shaper'.



5. Important Parts & Zones:

- Detwiste: Un-rove the roped form fabric after dyeing by twisting & turning. movement of fabric.
- Water& Softener bath: 1st bath is only water, 2nd one is for softener.
- Pedder: Two pairs of padding rollers set at the top of each bath. They squeeze the excess water from the fabric.

Ring & Ring Pulley: Works as a guide of fabric & maintain required Dia

Technical Parameter

- Fabric Passing Speed: Depends on count & GSM
  For low GSM fabric–60-65m/min For Medium - 55- 58 m/min
  For High - 50-52 m/min
- Over feed regions : J – box, Before Pedder 1 & Pedder 2
- Pressure in Pedder : Pedder 1 4- 5 bar Pedder2–3.5-4bar
- Types of Softener used : Anionic, Cationic & Silicon softeners
  are used.
- pH of bath should be 4.5-5.0
- Concentration of softener – 10 g/l
- Bath is changed after every 100 kg fabric

Dia of Shaper	:	Max. 52 inches Min. 18 inches
Water recovery%	:	140-150%
Power consumed	:	400 v. 50 Hz.

DRYER:

Manufacturer	: SANTEX, SWITZERL AND. FONG'S, HONGKONG.

1. Function:

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

Main Parts:

- Feed unit; contains conveyor belt & number of rollers.
- Two drying sections – i) upper level (3 chambers) Lower level (3chambers Heating system associated by STEAM Line & Nozzles.
- Blower, to spread the steam through-out the chambers.
- Exhaust air ventilator.

Technical Parameters:

• Speed of passing fabric	:	22-40 m/min
• Shaper length	:	according to required Dia
• Overfeed ratio	:	Edge drive zone– 1.0-1.5
• Retard roller – 0.80-0.85		
• Take-out zone – 0.85-0.90		
• Conveyor belt – 1.0-1.05		
• Plaiter – 0.80-0.85		

- Compaction% : according to Shrinkage result
  - S/J – 10-15%
  - Rib –10-12%
  - Interlock – 8-10%
  - Pique – 7-8%

- Shoe pressure : S/J – large dia – avg. 30 psi
  S/J – smaller dia – 10-15 psi
  Rib – 10-20psi Lycra - <10psi

→ Power consumed : 80 kw
→ Thermo-Oil temperature : 90°c

SLITTING MACHINE:

No. of machines : 3
Manufacturer : BIANCO, ITALY.

Function:

→ Slit-cut the tubular fabric through the needle mark.
→ Remove excess water.
→ Prepare the fabric for next ope

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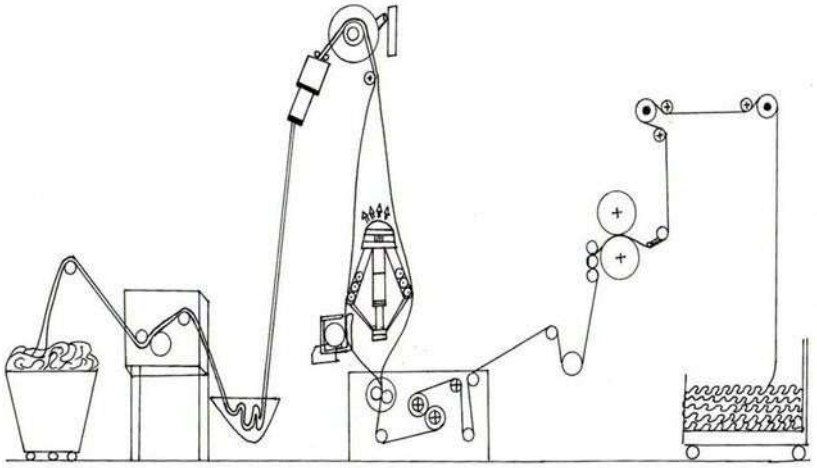

Slitting Machine Material Passage (Left to Right)

Main Parts:

→ Squeezer
→ J-box
→ Detwister
→ Spreader
→ Rotary cutting blade
→ Auto Centering system
→ Conveyor & Plaiter

Technical Parameters:

→ Speed : Varies with type of fabric
→ Overfeed : In feed zone, cutting zone, Conveyor belt (20-30%)
→ Pressure : In Detwister zone-0.5 bar, in Padding – 4-5 bar

Main Parts:

→ Squeezer
→ J-box
→ Detwister
→ Spreader
→ Rotary cutting blade
→ Auto Centering system
→ Conveyor & Plaiter

Technical Parameters:

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→ Overfeed : In feed zone, cutting zone, Conveyor belt (20-30%)
→ Pressure : In Detwister zone-0.5 bar, in Padding – 4-5 bar

STENTER

No. of machine : 3
Manufacturer : BRUKNER, GERMANY (2)
TUBETEX, USA (1)

Function:

→to dry the fabric.

→Heat-set the synthetic fiber fabric.

→Controlling the width of fabric or maintain dimensional stability.

→controlling the GSM of fabric.

→ skew ness & Bowing controlling of stripe fabric.

→Spirality & Twisting control.

→Fabric hand-feel modification-like-Softening or Hardening.

→Shade control.

→Gumming & Cutting

Stenter m/c (full length view)

Stenter m/c (chain & clip system)

Important Zones & Parts:

→ Back Zon

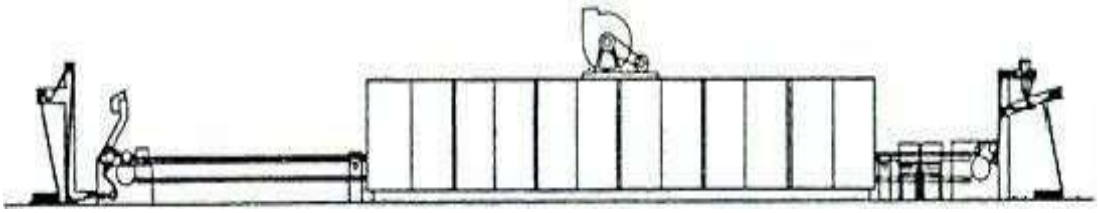
- Guider
  - Two Baths & Padder or Squeezer
  - Auto centering

→ Middle Zone

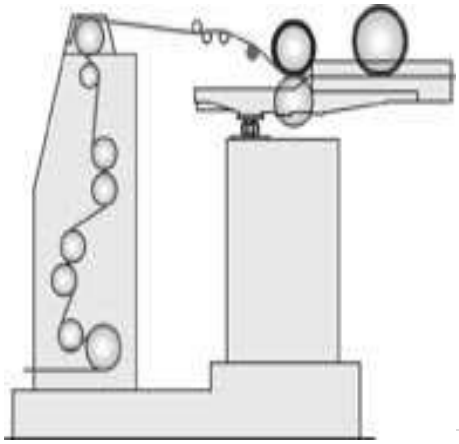
- Over feed regions
  - Bianco or Mahloarrangement.
  - Chain & clipsystem
  - Chambers (Contains blower, heater, recovery)

→ Front Zone

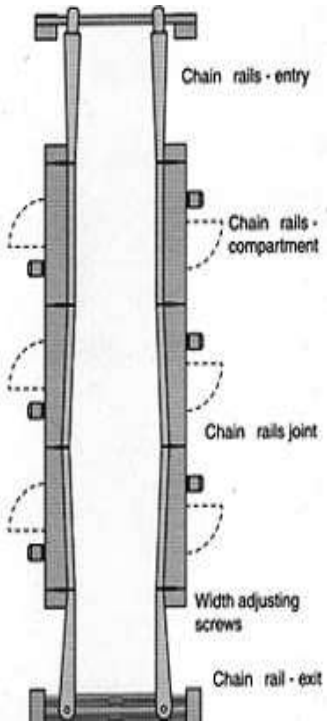
- Over feed zone
- Plaiting
- Static electricity remover.



Fabric path of stenter



Overfeed & pinning



Fabric in the chain

Extra attachment:

- ✓ Mahlo attachment for bowing control.
- ✓ Selvedge gumming device
- ✓ Selvedge cutting device

Technical Parameters:

- Fuel used for heating : Gas (for Gas-Stenter) Thermo-Oil (for Oil-Stenter)
- Working Width : 600-2600 mm
- Total Length : 138 ft.
- No. of Chambers : 8
- Chamber length 10 ft. each
- No of Motors : 96
- Pedder Pressure (avg. 5 7) : Max. air Pressure – 10 bar

  Max. Steam Pressure – 0.7 bar
- Overfeed Ratio : Back Zone –0-5

Master overfeed – 80% (in case of heat-set 15-20%)

Wheel overfeed – 3% Feed

overfeed–3-5% Take-up

overfeed – 15-20%

Temperature : Normal-130 to 150°
Heat Set -180 to 210°

- Speed of Passing Fabric : Normally 35-40 m/min
  Heat set 18-22 m/min
- Width Controlling : S/j +1-2inches Interlock/Rib - 1% Lycra +8-10%
- Pedder bath capacity : 250 lit
- Types of Softener used : White, Color, Silicon Softener

Production:

Capacity: 5 tones/shift
Actual production: 3.5-4.5 tones/shift

Heating Arrangement

For Gas Stenter: Rotamatic Burner for Oil Stenter: Termo-Oil

Parameters used for different types of fabric

BRUCKNER

Fabric	Req. GSM	Finish GSM	R	F	B	Temperature	Speed m/min	Over feed
S/J	140	-	68”	71”	67”	140	14	**80%**
”	160	150/52	56”	64”	60”	150	20	**80%**
”	180	170/72	54”	56”	54.5”	110	12	**60%**
“	190	188/90	58”	61”	57”	110	15	**80%**
H/J	280	270/75	64”	67”	62”	110	7	**80%**
Loop back	280	255/60	74”	78”	75”	110	9	**80%**
Fleece	260	260/65	74”	80”	75”	110	9	**80%**
1×1 rib	240	224/26	72”	75”	74”	110	10	**80%**
Bolton stripe	**330**	**340/45**	**62”**	**67”**	**65”**	**130**	**10**	**80%**

OPENWIDTH COMPACTOR:

M/C quantity	:	01
Brand	:	Bruckner, Germany
Maximlinespeed	:	60 m/min
Useablelinespeed	:	30 m/min Maxm dia :95 "
Workableдia	:	90"
Steamboxtemp.	:	80° C
FeedR/Ltemp.	:	105° C
Overfeed(%)	:	up to 50 %
Shoepressure	:	Max-18 Min-5
SensorPosition	:	-Shoe pressure (Oneshoe)
-Retard Roller ratio		
-Plater Ratio		
-Right-Left roller pressure		

Function of the Machine:

→ To compact the fabric
→ To control the shrinkage
→ To maintain proper width and G.S.M

Heating system: Steam

Main parts of the machine:

- ✓ Heating chamber
- ✓ Blower(2, one at the entry chain zone for uncurling and another at the entry of compacting zone)
- ✓ Synthetic blanket as a conveyor,
- ✓ Folder
- ✓ Exhaust fan
- ✓ Unpinning cylinder(40%□+40%)
- ✓ Belt cylinder (40%□+40%)
- ✓ Uncurling device at entry of compacting zone.
- ✓ sensor
- ✓ brush roller

Additional attachment:

- ✓ Selvedge cutting
- ✓ Selvedge safety
- ✓ Pinning safety
- ✓ Selvedge unrolling

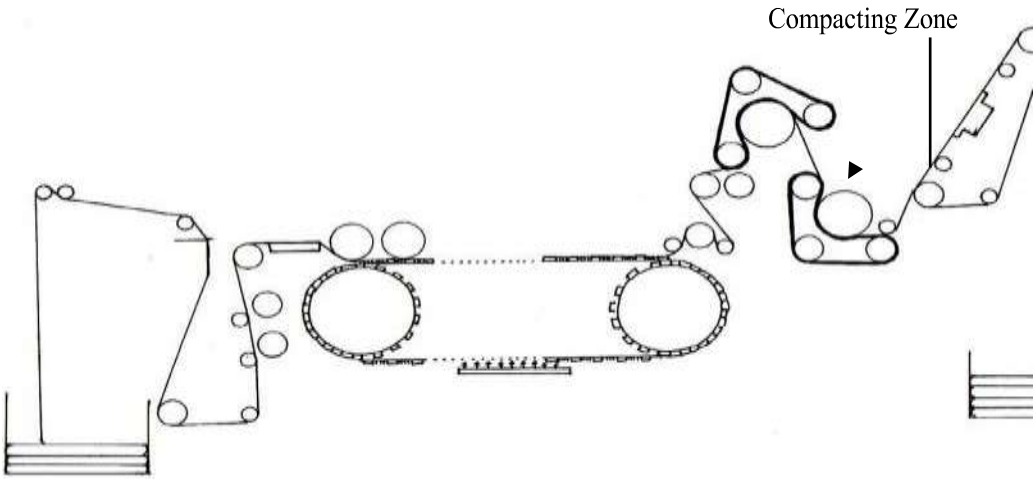


Fig. Material Passage

Production: Capacity: 5 tones/shift or 10 tons/day Actual production: 4 tones/shift

Utility: Steam Electricity, Compressed air

SPECIAL FINISHING SECTION

Sueding or Carbon Finishing or Pitch Finishing:

No. of m/c : 2
Manufacturer : LAFER, ITALY

Function:

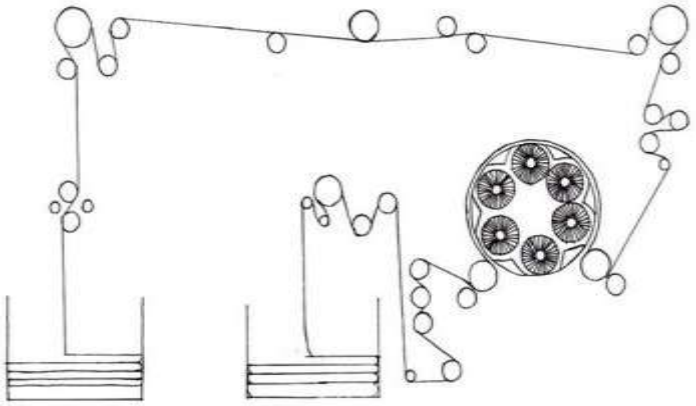
- ✓ Make the surface of fabric Smooth
- ✓ Improve heat insulation properties.
- ✓ Good Hand feel

Technical Parameters:

- ✓ Types wires –Carbon
- ✓ Fabric speed – S/J : 8-11 rpm
- ✓ Rib/Interlock: 9-10rpm
- ✓ Terry fleece: 10-11 rpm
- ✓ Tension – 10-16kg-wt
- ✓ Drum rpm – 20-25 rpm

Specification:

- ✓ No of motor: 08
- ✓ Winch speed: 10-30m/min
- ✓ Machine speed: 50m/min (max)
- ✓ Drum speed: 30-35-50 rpm (Max 70)
- ✓ Pile roller no: 06
- ✓ Pile made of Plastic
- ✓ Plaiter tension: 6kg
- ✓ Taker in tension: 20kg
- ✓ Fabric return driver Tension: 25kg



Material Passage

- ✓ Drum Tension: 50kg
- ✓ Speed range: 10-40m/min
- ✓ No of cylinder/drum: 2 for double cylinder
- ✓ 1 for single cylinder
- ✓ No of pin roller: 24× 2 = 48
- ✓ 24× 1= 24
- ✓ Cylinder r.p.m (General): 100
- ✓ Tension: 3 kg

Raising or Brushing:

- ✓ M/Quantity: 01
- ✓ Brand-GEMATEX
- ✓ Model: KRM 6725
- ✓ Origin-Germany
- ✓ Year of manufacture-1999
- ✓ Voltage - 400V
- ✓ Nominal Current -63A
- ✓ No of Pile:12
- ✓ No of Counter-Pile:12

Function

- ✓ To raise or tear-out the extra thread loops on the back-side of fabric
- ✓ Increase the warmth of fabric.

Singeing

No. of m/c - 1
Manufacturer- OSTHOFF – SENGE, GERMANY

Function

To remove the hairs form fabric surface by burning in extremely heated flame

Technical parameters

Flame temperature : 100-110°cFabric
speed : max 90 m/min

RAW MATERIALS USED IN DYEING

In the industry the raw materials used for production are:

1. Grey fabrics
2. Dyes
3. Chemicals

1. **Grey Fabrics**:
   Following types of gray fabrics are dyed:
   1. Single jersey
   2. Single jersey with Lycra
   3. Polo pique
   4. Single Lacoste
   5. Fleece
   6. Interlock
   7. Interlock with Lycra
   8. Rib
   9. Rib with Lycra
   10. 1X1 rib
   11. .2X2 rib
   12. Different types of collar & cuff

Dyes

The Following dyes are used:

11. Reactive
12. Disperse

Name of Dyes	Origin	Supplier
Cibacron Yellow - F4G	Singapore	Swiss color
Cibacron Yellow FN2R	Singapore	Swiss color
Cibacron Orange – FNR	Singapore	Swiss color
Cibacron Scarlet -F3G	Singapore	Swiss color
Cibacron Red-FN3G	Singapore	Swiss color
Cibacron Red-FNR	Singapore	Swiss color
Cibacron Red-FN2BL	Singapor	Swiss color
Cibacron Scarlet -FN6G	Singapore	Swiss color
Cibacron Navy –WB	Singapore	Swiss color
Cibacron Red -WB 150 %	Singapore	Swiss color
Cibacron Red -HDN 200 %	Singapore	Swiss color
Cibacron Turquoise –HGN	Singapore	Swiss color
Bezactive Red SLF	Switzerland	RH corporation
Bezactive Yellow S-MAX	Swizerland	RH corporation
Bezactive Blue S-GLD	Swizerland	RH corporation
Bezactive Blue SLF	Swizerland	RH corporation
Bezactive Red S-3B	Swizerland	RH corporation
Bezactive Red S-MAX	Swizerland	RH corporation
Bezactive Yellow S-8G	Switzerland	RH corporation
Terasil Black SRL-O1	Singapore	Swiss color
Terasil Black W-NS	Singapore	Swiss color

Terasil Blue BGE-01	Singapore	Swiss color
Terasil Blue WBLS	Singapore	Swiss color
Terasil Navy GRLC	Singapore	Swiss color
Terasil Red WRS	Singapore	Swiss color
Terasil Violet BL-01	Singapore	Swiss color
Terasil Yellow W-4G	Singapore	Swiss color
Remazol Blue-RR	German	Dyester
Remazol Yellow-RR	German	Dyester
Remazol Red –RR	German	Dyester
Remazol Brillient Yellow -3GL	German	Dyester
Remazol Turquoise Blue-G	German	Dyester
Livafix Rubina CA	German	Dyester
Livafix Red CA	German	Dyester
Livafix Blue CA	German	Dyester
Livafix Yellow CA	German	Dyester
Livafix Amber CA	German	Dyester
Livafix Orange CA	German	Dyester
Livafix Bri Yellow CA	German	Dyester
Reactive Black GRC	China	LC
Reactive Black B	China	LC
Reactive Red 3RS	China	LC
Sumifix Yellow EXF	China\ Indonesia\ Japan	Fakir dyes
Sumifix Red EXF	China\ Indonesia\ Japan	Fakir dyes
Sumifix Blue EXF	China\ Indonesia\ Japan	Fakir dyes
Sumifix T. Blue GN	China\ Indonesia\ Japan	Fakir dyes
Sumifix Red 3BS	China\ Indonesia\ Japan	Fakir dyes
Sumifix Yells 3RS	China\ Indonesia\ Japan	Fakir dyes
Sumifix yells GR	China\ Indonesia\ Japan	Fakir dyes
Sumifix Blue BRF	China\ Indonesia\ Japan	Fakir dyes
Terasil Yellow - F4G	Singapore	Swiss color
Terasil Orange – FNR	Singapore	Swiss color
Terasil Scarlet -FN6G	Singapore	Swiss color
Terasil Red-FN3G	Singapore	Swiss color

Chemical:

Chemicals Name	Supplier	Price (Tk/Kg)	Mode of Action
Kappasol AF 200	Kappachem	371	Antifoam
Kappwet BOS	Kappachem	350	Wetting (Detergent)
Kappquest FE	Kappachem	147	Sequestering
Kappazone H53	Kappachem	142	Peroxide stabilizer
Kappasoft BD	Kappaachem	283	Cationic Softener
Kappasoft SM	Kappachem	284	Silicon Softener
Kappatex R98	Kappachem	345	Reducing Agent
Invatex PC	CIBA	139	Peroxide Killer
Silvatol FLN	CIBA	467	Anti Oil
Cibecel DBC	CIBA	176	Leveling gent
Anti per R	Gentec	210	Peroxide Killer
Anti per PRB	Gentec	211	Peroxide Killer
Eriopon OS	CIBA	573	Reducing agent
Invatex AC	CIBA	180	Core neutralizing
Cibafix ECO	CIBA	396	Fixing
Tinofix FRD	CIBA	316	Fixing
Irgasol DAM	CIBA	271	Fixing Remover
Cibatex AB45	CIBA	188	High Temp. pH Stabilizer
Univadine DIF	CIBA	468	DisperseLevelingAgent
Romapon 173	Daystar	88.53	Anticrease
Uni enzyme 1000	Hunan	290	Enzyme
Acetic Acid	Taiwan	89	Acid
Soda Ash	China	26	Alkali
Glaubar Salt	China	16.28	Electrolyte
Caustic Soda	China	52.34	Alkali
Hydrogen peroxide 50%	India	45.4	Bleaching Agent
Oxalic Acid		75	Acid

PRODUCTION SEQUENCES AND OPERATIONS

Sequence of operation

Lab dip approved

▼

Grey fabric inspection

▼

Batching

▼

Scouring & Bleaching

▼

Enzyme (If required)

▼

Dyeing

▼

Bath Drain

▼

Cold Wash

▼

Neutral With Acetic Acid

▼

Soaping

▼

Fixing (If required)

▼

Softening

Dyeing Process for Lab

Neutralizing by

acid wash
▼
Soap wash
▼

Drying

Polyester Dyeing in Lab:

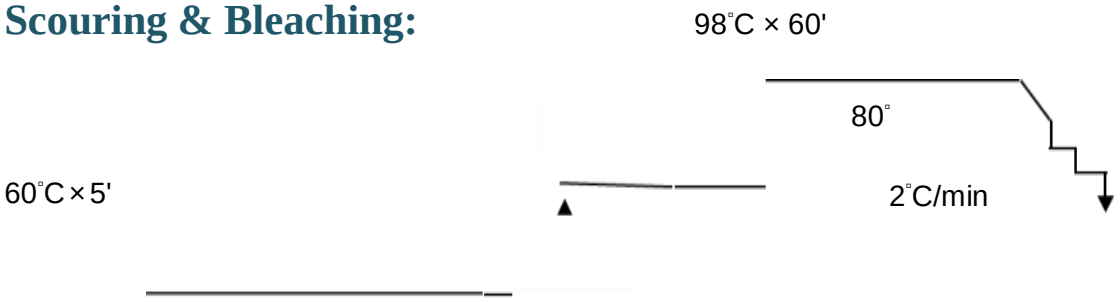
Sample
▼
Neutralizing (by acetic at 50° c)
▼
Cooling
▼
Dispersing agent + Buffer + acetic + Dyestuff
▼
45 min Run at 135° c
▼
Reduction cleaning (Hydrose + Eriopon OS + Caustic) At 80° c for 45 min
▼
Wash
▼
Chemical Wash
▼
Dry

Dyeing Parameters For Bulk Production:

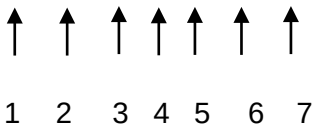
Process	Temp(˚C)	pH	Time min	M : L ratio
Scouring - Bleaching	98	11.5-12	60'	1:6 or 1:8
Enzyme Wash	55	4.5-5	60'	1:8
Enzyme Deactivation	70	--	10'	--
Reactive Dyeing (Light Shade)	60	10.2-10.8	60'	1:8
Reactive Dyeing (Dark Shade)	60	10.9-12	60'	1:8
White Shade	98	10.5-11.5	20'	1:8
Turquoise color dyeing	80-90	10.9-12	90'	1:8
Polyester dyeing	130	4-4.5	45'	1:8

General process for Pre-treatment

Scouring & Bleaching:

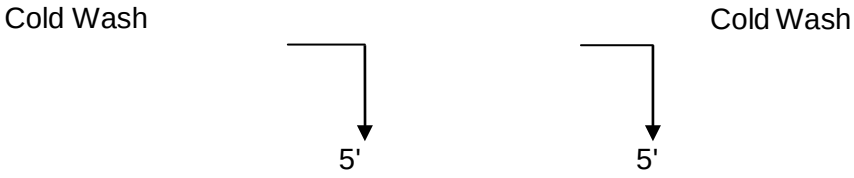


Room Temperature

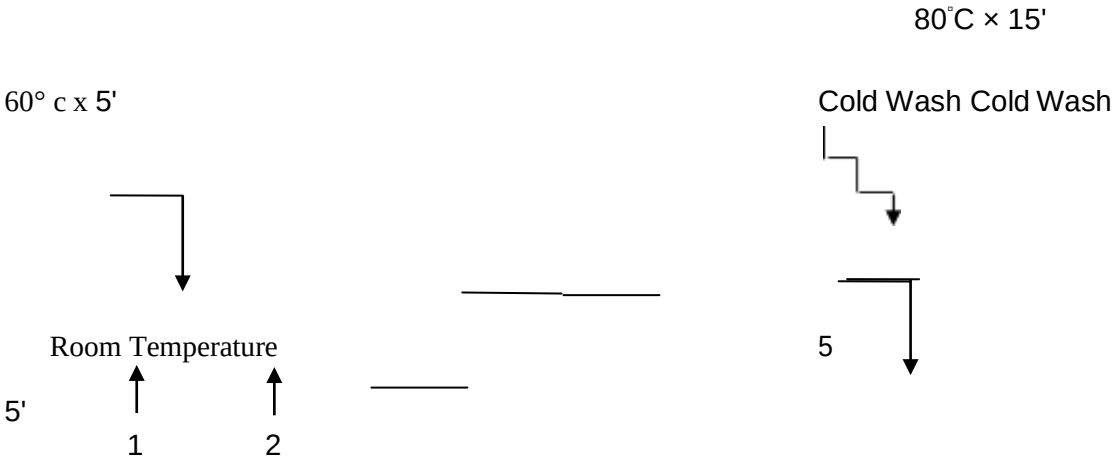


H_2O_2

1) Ant creasing
2) Wetting Agent
3) Sequestering Agent
4) Antifoam
5) Stabilizer
6) Soda
7) Caustic

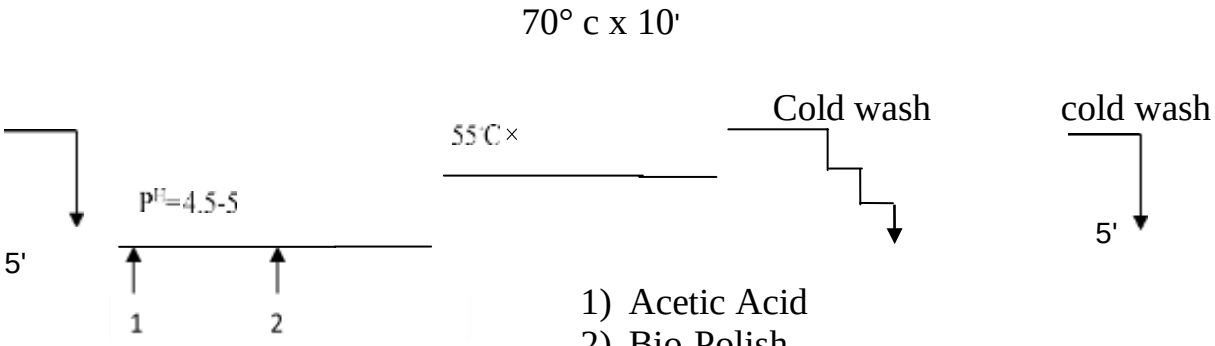


Chemical Wash:



1) Oxalic Acid
2) Peroxide Killer

Bio Polishing/Enzyme Wash:



1) Acetic Acid
2) Bio-Polish

General process for Dyeing

- Auxiliaries are added at 50° C
-Salt added by dosing system (time : 10-20')
- pH maintained at6.5-7
-Color dosing at 6O° C for 20'

Exhaustion & Fixation:
-After 30' soda ash added by dosing for 30-35'
-pH checked & maintained at 10.5
-Dye bath is kept at 60° C for 40-60'
-After every 10' the sample is checked fixation occurs during this time.
-Rinse for 10' & the bath is drained.

Neutralization:
-The material should be neutralized to remove alkaline condition at room temperature by acid wash for 15 min & rinsing will be carried on for 10 min.

Soaping:
-Then soaping agent is added & temperature raised to 90°-100°C for 10 min.
-The bath is cooled 7 rinsed for 10 min.
-Dye bath temperature then cooled to 60° C.

Softening:
Softener is applied to soften the fabric as well as it improves the hand feel. The material is treated at 60°C for 20 mins. Then rinsing again & material unload.

Procedure:

At first the bath is set at 50° C & take the right volume of water in the dye bath.

▼

Required amount of wetting agent is added.

▼

Caustic soda is added & second heat command 60°C & stabilizer is added also.

▼

H_2O_2 is dosed & 10' runs.

▼

Temperature raised to 100° C & run the material for 30'

▼

Coolingthebathat75°C&bathisdrained.At 90° C the material is run for 15 mins

▼

Cooling the bath to 75°C to Darin

▼

Add Acetic Acid to neutralize the whole bath of fabric & run time is 20'

▼

Rinse the fabric for 5' & bath is drained.

▼

New water from reserver is taken & pH should be 4.5-5 .

Enzyme is injected to the bath. Run time is 60' at 55°C

▼

Temp. Raised to 70° C & run time 10' & then drain

▼

Againnewwateristaken&dosingofglaubarsaltfor20'&pHshouldbecheck (pH =7)

▼

Color dosing for 30' at 50°C

▼

Soda is added by dosing for 40'at 50°C

▼

Then raise the temp. & run the fabric for 35-60'.At this time after every 10' the sample is checked.

▼

Rinse the material for 10' & bath is drained.

▼

At room temp. acid treatment is done for 20'& rinse the material for 5'

▼

Soaping is done at 90°C for 10 min & bath is drained.

▼

Fixing agent is added at 50° C & run time is 20' & bath is drained

▼

Softening is done at 60° C for 20'& bath is drained.

▼

Finally the fabric is unloaded.

Process for White Shade:

At first Scouring bleaching chemicals are added to the bath & they are treated at 98°C for 60'

▼

Temp. Lowered at 80°C & OBA is added. Run time is 10'.

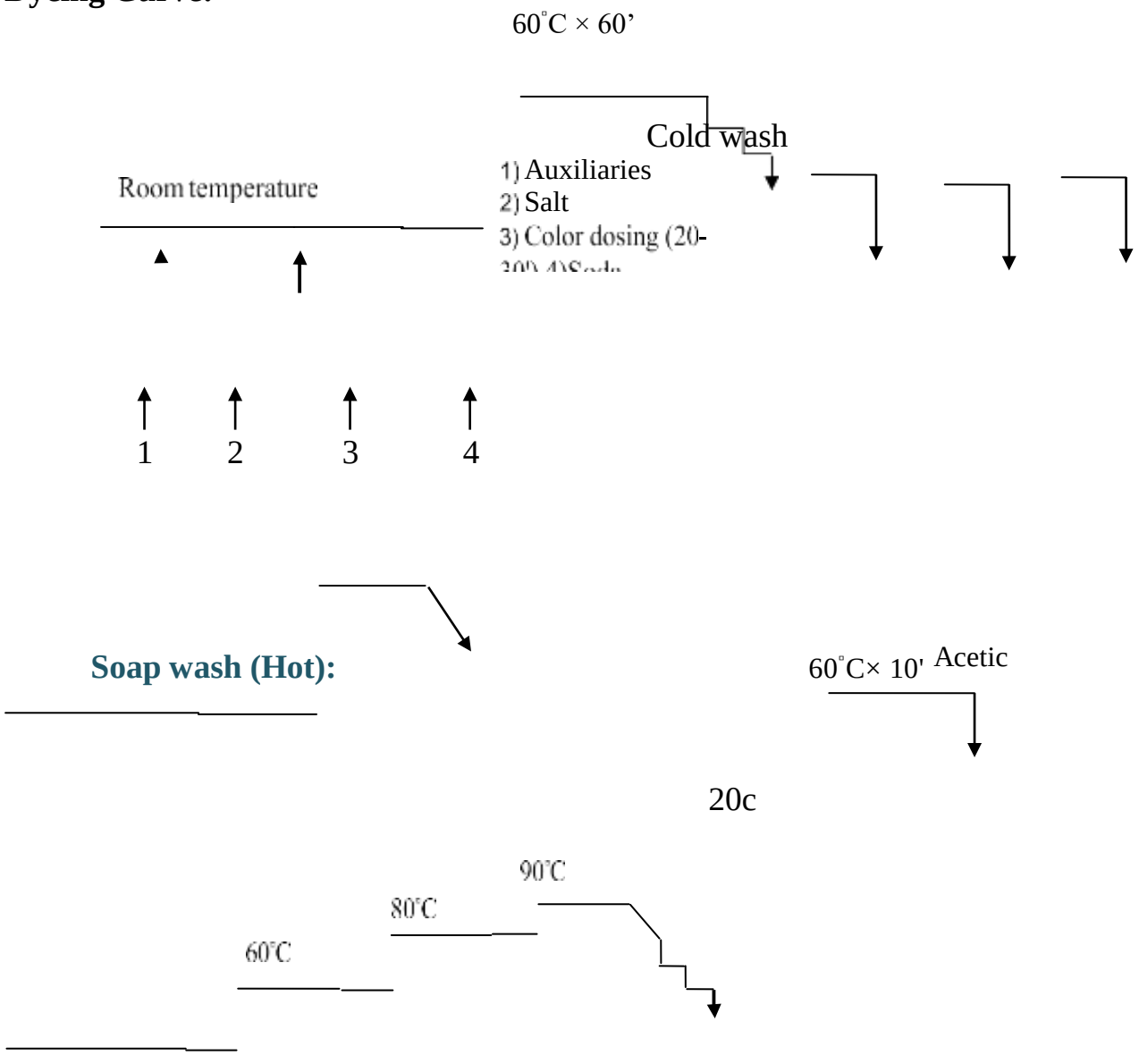
▼

Temp. Raised to 98° C & Run time is 20'.

▼

Then enzyme treatment is applied & then softening occurs

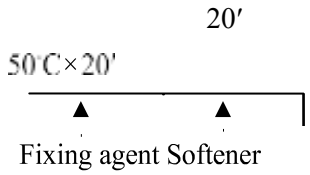
Dyeing Curve:



Soaping chemical

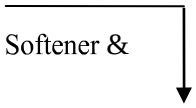
Auxiliaries/Chemicals	Amount (g/l)	Amount (%)

Fixing (if dark shade):



Softening:

40°C × 20′



Some Dyeing Recipe used in Bulk dyeing process:

Knit Dyeing Recipe#1

Color : 10-100-White
M: L : 1:8
Material Type : 100% Cotton

Scouring&Bleaching		
Kappasol AF -2000 (Antifoam)	0.15	-
Polymer ECO (Ant creasing)	0.50	-
Tino Wine (Multi-Functional)	3.00	-
Caustic	2.00	-

H_2O_2 (50%)	8.00	-
PHYSICAL BLEACHING		
Bluton BVB (OBA)	-	0.23
NEUTRALIZATION		
Oxalic Acid	1.00	-
Denquest HYN (Sequestering)	0.20	-
ENZYMATIC CLEANING		
Acetic Acid	0.80	-
Unizyme 1000L (Enzyme)	0.60	-
FINISHING		
Softener E-31	-	10
Denquest HYN (Sequestering)	0.20	-

Knit Dyeing Recipe#2

Color : Navy
M: L : 1:8
Material Type: 100% Cotton

Auxiliaries/Chemicals	Amount (g/l)	Amount (%)
SCOURING & BLEACHING		
Kappasol AF -2000 (Antifoam)	0.10	-
Kappawet BOSS (Detergent)	0.50	-
Polymer ECO (Ant creasing)	0.70	-
Denquest HYN (Sequestering)	0.40	-
Fistol AWP (Stabilizer)	0.40	-
Caustic	1.50	-
Soda	0.80	-
H_2O_2 (50%)	2.50	-
NEUTRALIZATION		
Oxalic Acid	0.50	-
ENZYMATIC CLEANING & PEROXIDE REMOVAL		
Antiper R (Peroxide Killer)	0.50	-
Acetic Acid	0.80	-
Enzyme 1000L (Enzyme)	0.30	-
DYEING BATH		
Kappasol AF -2000 (Antifoam)	0.10	-
Biavin – 109 (Ant creasing)	0.50	-
Albatex – DBC (Levelling)	0.50	-
Remazol Ultra Yellow RGB	-	0.8060
Remazol Ultra Red RGB	-	0.6160
Remazol Navy RGB	-	1.060
Glauber Salt	50	-
Soda	15	-
NEUTRALIZATION		
Acetic Acid	0.50	-
SOAPING		
Kappaquest A41 (Soaping)	1.00	-
AFTER TREATMENT		
Softener SA -1000	-	1
Invatex –AC (Core Neutralizer)	0.20	-

Knit Dyeing Recipe#4

Color : 902-Noir (43517) Black
M: L : 1:8
Material Type : 100% Cotton

Machine wash

Recipe:

-First of all these two chemical caretaker & treated in normal temperature for30min. So
daash = 0.5 g/L
Bleachingpowder = 0.5 g/L Then Direct drain is done.

for white - - -
First of all these two chemicals are taken & treated in normal temperature for 30 min.
Soda ash = 0.5 g/L
Bleaching powder = 0.5 g/L
Then direct drain is done.
-After that these two chemicals are taken & treated with fabric at 98°C for 60 min.
Hydrose = 1-2 g/L
Caustic Soda = 1-2 g/L

Add hydrose (6 g/L) & caustic Soda (6 g/L)
▼
Run 20' at 110° C
▼
Run 10' at 95° C
▼
Run 10' at 80° C
▼
Run 10' at 60° C
▼
Run 10' at 40° C
▼
Drain

pH check in different point in dyeing processes:

Name	Range
Bio-Polish ==========	4.5-5.0
Leveling ==========	5.5-6.0
Salt ==========	6.0-6.5
Soda ==========	10.5-11.5
Dye bath==========	10.5-11.5
Soaping ==========	6.0-6.5
Softener ==========	4.5-5
Fixing ==========	5.0-5.5

Quality Testing, Control & Assurance System

The quality assurance department is assigned to maintain consistently uniform quality of the material in process & various stages of its manufacturing.

Objects of quality control

1. Research
2. Selection of raw material
3. Process control
4. Product Testing
5. Specification Test

Quality Assurance Procedure:

Knit Concern Ltd. assures the quality of their products in the following three steps:

- ✓ In laboratory.
- ✓ In dyeing section
- ✓ In finishing section

The quality assurance procedures are described below:

In Laboratory:

- ✓ Swatch card from buyer according to their requirement is received.
- ✓ Recipe prediction for sample dyeing using CCMS.
- ✓ Sample dyeing until matching with the swatch card. Acceptable color difference is less than 1.

2. If matching is OK, then it is sent to the buyer for approval

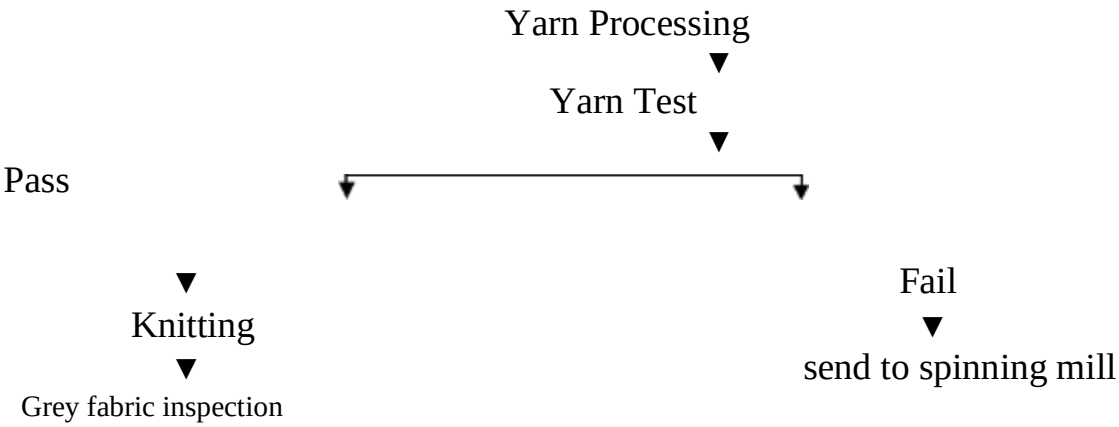
In Dyeing section:

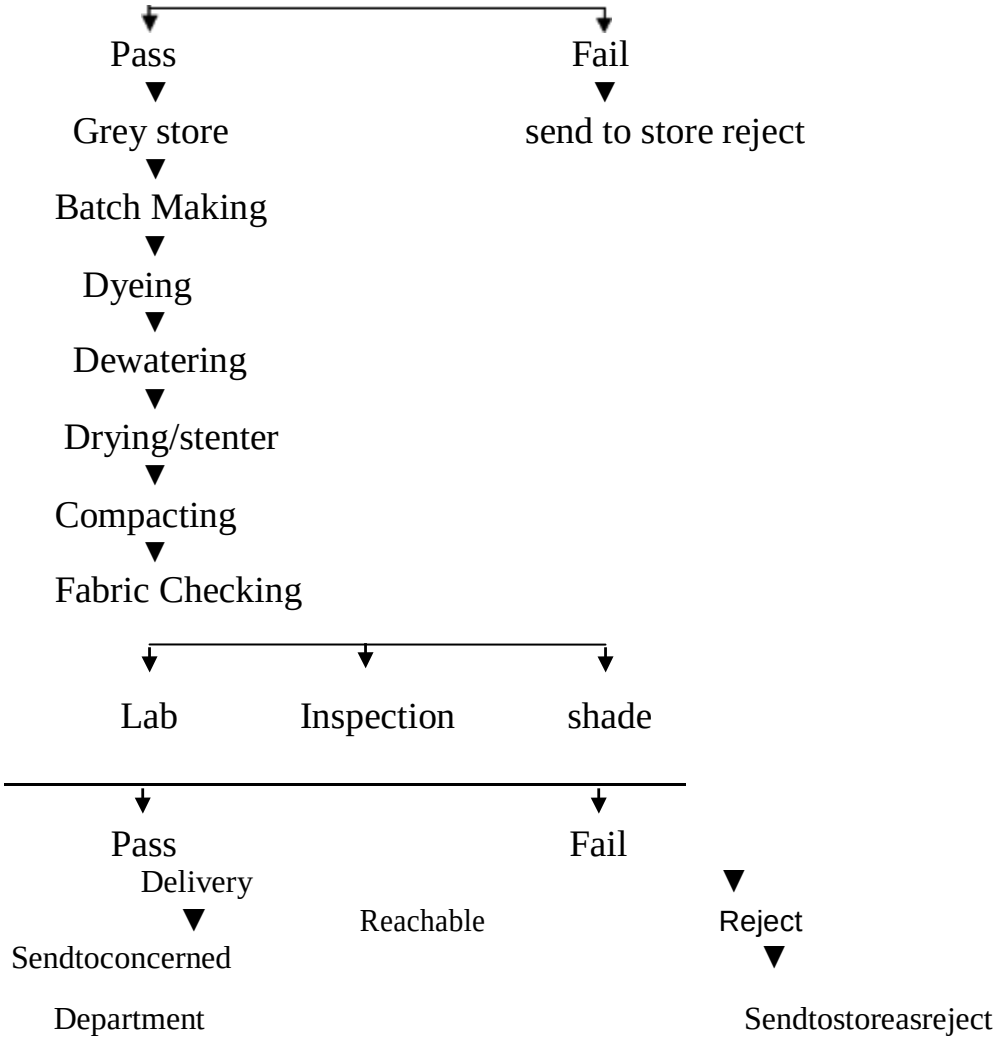
- ✓ After approvalfromthebuyer,sampledyeingisdonein dyeingm/c,indyeing shed & again matched with the approved sample.
- ✓ If result is OK, then balk production is commenced.
- ✓ Duringdyeingprocess, beforethe final acid wash, samples are takenandchecked for accurate shadematching.
- ✓ After dyeing sample is collected & matching is done.
- ✓ Rubbing and wash fastness tests are carried out

In finishing section:

- ✓ Correctly dyed, after treated & matched fabrics are allowed for finishing.
- ✓ Byusingaseriesoffinishingmachinescorrectwidth,softness &appearanceare maintainedaccordingtorequirements.
- ✓ Then sampling is done several times to test GSM, Shrinkage & fastness properties.
- ✓ Finally fabric is inspected& prepared for delivery

In SYL following flow diagram is followed-




Pass
Fail
Grey store
send to store reject
Batch Making
Dyeing
Dewatering
Drying/stenter
Compacting
Fabric Checking
Lab
Inspection
shade
Pass
Fail
Delivery
Reachable
Reject
Sendtoconcerned
Department
Sendtostoreasreject

Physical test of fabric:

Fabric weight

-Dimensional Changes in lengthwise

-Dimensional Changes in widthwise

-Seam Slippage

-Spirality test

-Pilling Resistance

-Softness test

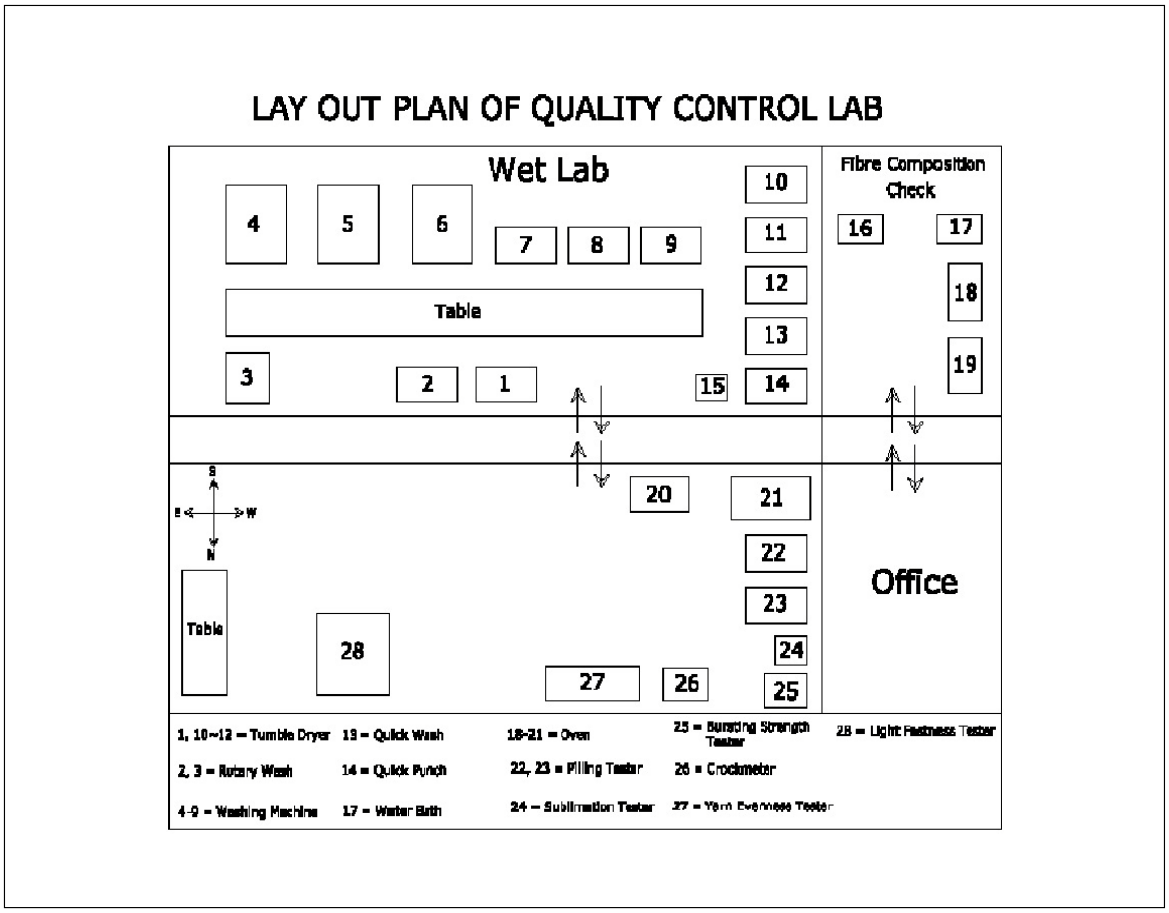
-Hairiness test

Chemical test of fabric:

- Fastness to rubbing
- Fastness to washing
- Fastness to perspiration

Besides these, for the best qualified production these Chemical Test should be performed-
-Fastness to light
-Fastness to heat
-Fastness to sea water
-Fastness to chlorinated water
-Fastness to actual laundering

Lay out plan of QC Lab:



Problems Encountered in Dyeing

Uneven Dyeing

1. It can be causedduetorapidadditionofdyesandchemicals. For this purpose the dosing of soda ash should be maintained properly.
2. Pressure difference.
3. Over loading in the m/c.
4. Yarn lot mixing.
5. Improper control of temperature.
6. Less amount of leveling agent.
7. Improper pretreatment

Rope to Rope Uneven Shade

Improper rope length in each chamber.

Improper fabric flow speed in each nozzle.

Off Shade

- ✓ Improper M: Lratio.
- ✓ Lower amount ofauxiliaries.
- ✓ Improper mixing ofdyestuffs.

Dye Spots

This is most common fault caused by operator not correctly mixing and thoroughly dissolving dyestuffs in the right amount of water

Batch to Batch Shade Variation

If any of parameters of dyeing are changed then it will produce problems in batch to batch consistency. In order to avoid this defect the following steps should be followed-

1. Maintain the same liquor ratio.
2. Check that the fabric has the same dye affinity.
3. Use the same standard program procedures for each batch.
4. Make sure that the operators add the right batch of chemicals at the same time & temperature in theprocess.
5. Check the water supply daily especially $p^{h.}$, hardness & Na_2CO_3 content.

Crease Mark

Crease marks are produced due to the lower concentration of anti-creasing agent and improper cooling rate (defective cooling gradient). This is encountered by increasing the concentration of anti- creasing agent and proper adjustment of cooling rate.

Running Marks

Running marks are frequently related to the material construction and are caused by poor opening of the fabric rope.

1. Reducing the machine load and running at as light lyhigher nozzle pressure, orusingthe next largest available nozzle size, may also help.
2. Either presetting or pre relaxation of the fabric before dyeing can avoid this problem.
3. Running and crack marks can also be are sultofin correct process procedures. A higher fabric speed, combine with slower rate so frinse and cooling will of ten correct the problem.
4. Care should be taken to check that bath draining temperatures are not very high especially viscose blends are involved.
5. Shock cooling of static material will also cause crack marks.

Intensive Foaming

In case of intensive foaming, which is caused when, the pumps try to pump a mixture of air and water. This reset sin the loss of nozzle pressure & floating of flake. If the foaming is severe it is better to drop the bath & restart the process, after adding an anti-foaming agent to the new bath.

Patchy Dyeing

It is caused, if dye solution is not correct and also scouring is improper.

Miscellaneous Problems

Batchtobatchprocessingmayvaryduetotheimpropercalculationofdyesandchemicals and improper strength of salt soda and H_2O_2 etc. Beside hardness of water and caustic may lead to an improper shade.

Finished fabric Inspection :

The final product should pass against the norms given by the buyer. The following tests are done-

-Shade check
-Gem test
-Width or diameter test
-Shrinkage test
-Crocking test
-Pilling resistance test
-Colorfastness totest
-Color fastness to perspiration
-Dimensional stability

For final inspection, Inspection table & Inspection m/c is used . The 4-point

system is given below-

Size of Defect	Penalty point
Less than 3 inches	1
3-6 inches	2
More than 6- 9 inch	3
More than 9 inch	4

Size of holes & openings-

1 inch or less	2
More than 1 inch	4

Some general rules of the inspection are-

1. Not 1 meter of cloth is penalized more than 4 points.
2. Cloth is inspected on face side only unless specified.

If the total defect parts per 100 yards of fabric are 40 or more the fabric will be rejected. But it may be changed according to buyer's requirements

Shade check:

The shade achieved is to be checked several times while in process & at finished state to ensure the customers demand under recommended light source .Generally the shade is checked at the following stage

-After dyeing
-After drying
-After trial for finishing

During dyeing period in QC there is a shade matching sequence:

Scoured sample
▼
Enzyme sample
▼
Salt Sample
▼
Sodasample (after 10 min)
▼
BD sample(60▫C × 20 min)
▼
Normal hot sample
▼
Acetic acid sample
▼
Chemical hot sample
▼
Softener sample

For this the following equipment’s are used:

1. Verivide light box
Manufacturer: Cundy building,frog island Origin:
England Light Source:
D-65(artificial
daylight) TL-84
(Shop light)
F (florescent light)
UV (Ultraviolet Blue light)

Procedure of GSM measurement by GSM cutter:

1. Cut the fabric with the G.S.M cutter.
2. Weight the fabric with the electric balance.
3. The cut sample is 100 sq.cm. The weight of the cut sample is multiplied by 100.
4. TheresultistheG.S.Mofthat particularfabric.Suppose ,
5. The weight of the fabric is 2.51 gm. That means the G.S.M of the fabric is 251 gm.

Specification of GSM cutter:

Name: G.S.M CUTTER
Manufacturer:JamesH.Heal&Company
limited. Origin: England

Width or diameter test:

After finishing the fabric diameter or width is measured by a measuring tape. If the width is more or less compactor is used to set the required width If width is more, then lengthwise tension is increased And if width is less it is increased byshape.

Shrinkage test:

Theshrinkagepropertiesisoneofthemostimportantpropertiestobecheckedforthe knitted fabric
For this the equipment used:
Name: Electrolux Washcator
Manufacturer:JamesH.Heal&Company
limited. Origin: England

There is a water label in m/c . Automatically water entered up to this label Then detergent
(10 gm) is added for per garment The useable program for Washcator are

The washing methods:

Based on ISO 6330, 3759, 5077

Rubbing fastness test

Rubbing fastness is tested by crock meter.
Name: Electronic Crock meter
Manufacturer: James Heal & Company limited.
Origin: England
Test method: ISO105x12.
Dry& Wet rub is including in this method.

Pilling Resistance Test:

Name: ICI Pilling Test
Manufacturer: James Heal & Company Ltd. Origin: England
Test method: EN ISO 12945-2
Description: For wool / wool Blends / Elastane Blends

7200 revolutions
-1 revolution /sec
For other type of fabric
-14400revolution
-1revolution/sec

Fastness Testing

❖ Color Fastness to Wash:

"ColorFastness"istheresistanceofthecolortofadeorbleedbywashing,light,waterdry-cleaning chlorine perspiration & ironing.

Test method: ISO 6330,3759,5077.

Equipment Used:

Rota Wash M:L=1:50

Multifilament size=10*4 cm Sample

Size=10*4 cm Temp.=50c

Time=30 min

ChemicalUsed:Detergent ECE(4g/1),Na-perborate(1g/1)

Shadechangeismeasuredbycolorchangescale&stainingscale.

❖ Color Fastness to perspiration :

Test Method: ISO- 105E04

Temp = 37 ±2°C
Time: 4 hr.
Dry Temp= 60°C
M: L = 1:
50
Wet Time: 30 min
Multifilament Size = 10*4 cm
Sample Size = 10*4 cm PH :8-5.5

Chemical Used:	Alkali (gill)	Acid (g/1)
1-histadine mono hydrochloride	0.5	0.5
Sodium Chloride	5	5
Di-sodium Hydrogen	2.5	2.2
pH	8	5.8
Distilled water	1000 ml	1000 ml

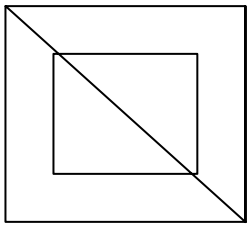
Dimensional Stability:

This is checked by spatiality test.

Equipment Used: Quick wash m/c

Templat e Size: -38"x38" -25"x25"
Temp.= 50° C
Time = 12 ' (Wash & Dry)

A B



D C

$$\text{Spirility}(\%) = \frac{2*(AC*BD)}{(AC + BD)} \times 100$$

The standard Spirility % is 5% after the domestic wash.

REMARK :

In this modern world the buyer requirement is increasing day by day. And they are conscious about Quality of product more To fulfil this QC department has a lot to do Online. QC also check the following fault- Hole, Fly yarn, Dye stain, Chemical Stain, Uneven shade , Meter to meter Variation, compactor Crease, Patchy dyeing, Yam contamination, Sinker mark, dyeing Crease etc.

So QC department is very much important in dyeing section.

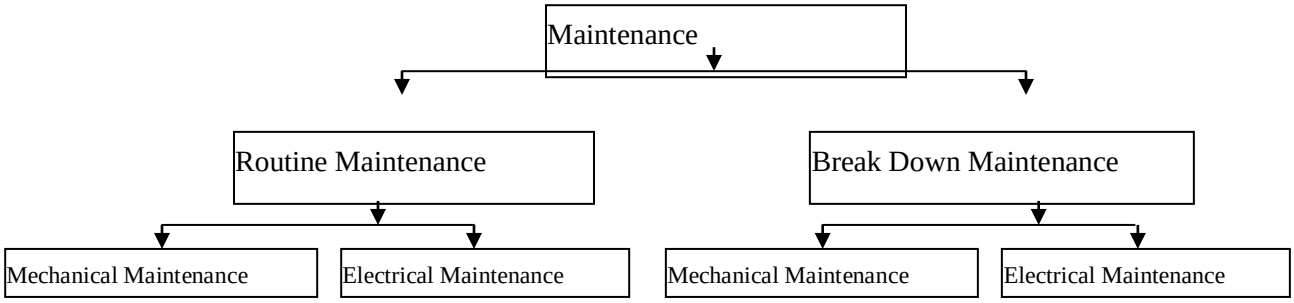
Maintenance Section

Maintenance of Machinery:

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.

2 types of maintenance are done:

1. Break down maintenance Routine maintenance



1. Break down maintenance: Break down maintenance is done instantly when problem arises in machine. In this case, repairs are made after the equipment is out of order and it cannot perform its normal functions.

2. Routine maintenance: After a particular period of operation, the machines are cleaned & reordered, that is routine or schedule maintenance. The maintenance department does it once in a month. Schedule maintenance varies, time in time & also depends on situation according to types of machines, because maintenance is directly related to production.

Most of the time, all the screws, nuts, bolts & levers are checked, lubrication is also done. Workers inform about the problem areas of the machines. Depending on their information maintenance is done. Maintenance engineer analyze the records and take steps according to requirement.

Routine: Maintenance is a necessary task in any industry. But the degree and interval of maintenance is dependent upon the age of the machineries. Landmark Textile Mills Ltd. has relatively new machineries, which are very modern and state-of-the-art. Due to this reason are lativelyless amount of maintenance is needed to be carried out in Landmark Textile Mills Ltd. Never-the-less, routine maintenance of the machineries of the dyeing section is carried out once a week.

As the dyeing section remains closed in Friday, the routine maintenance is carried out in Friday. As for break down maintenance (very few break down cases occur), proper steps are taken to rectify the problem.

Manpower Setup for Maintenance:

Post	Number of Employees
Mechanical Engineer	1
Electrical Engineer	2
Mechanical Fitter	1
Electrical Supervisor	1
Asst. Mechanic	2
Electrician	1
Asst. Electrician	2

Maintenance Procedure:

Maintenance:
Mechanical

Machine: Dyeing
Machines

Sl. No.	Item needed to be checked & Serviced
1.	Greasing of the winch bearing
2.	Complete cleaning of machine
3.	Cleaning of drain valves, replace seals if required
4.	Checking of air supply filter, regulators, and auto drain seals
5.	Cleaning of filter elements
6.	Greasing of unloading roller bearings
7.	Checking and cleaning (if required) of addition tank level indicator
8.	Checking the oil level of pump bearing and refill if required
9.	Checking the function of heat and cool modulating valves
10.	Checking of all belts and belt tension
11.	Check circulation, reel and other pumps
12.	Checking of all door seals

Maintenance: Mechanical
Machine: Stenter Machine

Sl. No.	Item needed to be checked & Serviced
1.	Removal of gas burnt deposits from chains
2.	Checking of gas burners
3.	Cleaning of softener application unit
5.	Checking and cleaning of steam pipe lines
4.	Checking and cleaning of gas pipe lines
5.	Grinding of fabric gripping pins
6.	Cleaning of ventilation duct
7.	Cleaning of m/c cabinet
8.	Checking of motors

Maintenance:
Mechanical Machine
Dewatering Machine

Sl. No.	Item needed to be checked & Serviced
1.	Cleaning of softener application unit
2.	Checking of rotating device of rotating trolley unit
3.	Checking of pneumatic pressure valves
4.	Checkingandreplacement(ifnecessary)ofrubberpadsofstretchingunit
5.	Checking of plaiting device
6.	Checking of speed regulating unit

Maintenance:
Mechanical Machine:
Tensionless Dryer

Sl. No.	Item needed to be checked & Serviced
1.	Checking of gas pipe lines
2.	Checking of gas burners
3.	Checking of belt conveyor system
4.	Checking of plaiting device
5.	Checking of speed regulating unit
6.	Cleaning of ventilation duct
7.	Cleaning of m/c cabinet

Maintenance: Mechanical
Machine: Compactor Machine

Sl. No.	Item needed to be checked & Serviced
1.	Checking of Steam pipe lines
2.	Checking of pneumatic pressure valves
3.	Checking of belt conveyor system
4.	Checking of plaiting device
5.	Checking of speed regulating unit
6.	Checking and replacement (if necessary) of compacting shoe
7.	Cleaning of compacting shoe

Maintenance:
Mechanical Machine:

Raising Machine

Sl. No.	Item needed to be checked & Serviced
1.	Checking of Gearing system and replacement of faulty gears
2.	Cleaning of fiber deposits from the pile and counter pile rollers
3.	Grinding of pins of pile and counter pile rollers
4.	Lubrication of gearing system

Maintenance: Mechanical
Machine: Boiler

Sl. No.	Item needed to be checked & Serviced
1.	Checking of gas pressure and gas supply line
2.	Dosing of softening chemicals to supply water
3.	Checking of all steam lines
4.	Cleaning of burner tank (after six month interval)
5.	Checking and replacement of valves
6.	Cleaning of feed water tank
7.	Checking and replacement of filters
8.	Cleaning of sight glass

Maintenance: Electrical

SL NO.	Items needs to be checked & serviced
1	Check main panels
2	Check panel cooling fan & clean its filter
3	Clean main pump inverter & its cooling fan
4	Check all circuit breaker ,magnetic conductors & relays
5	Check current setting of all circuit breaker & motor over load
6	Visual checking of all power & control cables
7	Check ail motor’s terminals
8	Check & clean fluff & dirt at all motor fan covers
9	Check DC drive of kneel motors
10	Check all pressure switches
11	Check calibration of main vessel & all addition tank
12	Check all signal isolators
13	Check setting & operation of lid safely switches
14	Check setting of tangle sensors
15	Check all pneumaticsolenoids

16	Check all indicating lamps
17	Check calibration of heating/ cooling modulating valve
18	Check all on/off switches

Maintenance Tools and Equipment:

Sl. No.	Maintenance tools/equipment's	Functions
1.	Adjustable wrench	Used for setting nut & bolts
2.	Pipe Spanner	For pipe fitting
3.	Spanner	Fixed Spannerfornut& boltsfitting
4.	Socket spanner	Handle system fornut & bolt fitting
5.	Hammer	To apply load where required
6.	Screw driver	To release any screw
7.	Punch	Used to fit any worn out shaft
8.	Lock opener	To open the clip of bearing
9.	Hack saw	To cut any metallic thing
10.	Outside calipers	To measure outside dia
11.	Inside calipers	To measure inside dia
12.	Slide calipers	To measure very small dia
13.	Vernier scale	To measure very small dia
14.	Chain ton	To lift heavy load
15.	Welding machine	To join metallicparts
16.	Grinding machine	To make the smooth fabrics
17.	Tester	To test electriccircuit
18.	Pliers	To grip anything & cut anything
19.	Avometer/Voltmeter	To measure voltage
20.	Steel tape	To measurelength, width& height
21.	Chisel	To cut any metal
22.	File	To smooth the rough surface

Maintenance Schedule

Serial No.	Parts Description	Check Time
1	All pumps(bearing, coupling)	3 month
2	All belts (loose/tight)	monthly
3	All bearing(grease/sound)	monthly
4	All gear box(oil/sound)	monthly
5	All valves leak	monthly
6	Reel rubber	monthly
7	Mechanical seal	monthly
8	Steam trap	monthly
9	Handle of lid	monthly
10	LID opening stopper	monthly
11	LID glass	monthly
12	Safety valve(mainkier &heat exchanger)	monthly
13	Pressure gauge	weekly / monthly
14	Water leveling scale	monthly

Remarks:

The maintenance department of Sahaba Yarn Ltd. is well equipped. It has sufficient maintenance manpower including mechanical and electrical engineers. They perform maintenance tasks of the machines during the holidays and vacations. Otherwise, they perform breakdown maintenance, which as stated earlier is very rare in Sahaba Yarn Ltd. To increase the lifetime of the machineries and ensure the proper running of the machines, the task of this department is very important.

UTILITY SECTION

Major Utilities Used In Sahaba Dyeing Are:

1. Water
2. Electricity
3. Steam
4. Compressed Air
5. Effluent treatment plant

WATER

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

There are three pumpun its available here– 1. Knit Dyeing – 3 pumps
2. Yarn Dyeing – 2 pumps
3. Printing – 2pumps

Quality of Water found in the raw water here – total Hardness – 250-300 ppm pH – 8-9 TDS – 2000-3000 ppm

Quality of water required for Dyeing:

	Hardness	Iron content	TDS	pH
Knit dyeing -	<70	0.02 ppm	<500	6.5-7
Yarn dyeing-	<50	0.02 ppm	<500	6.5-7

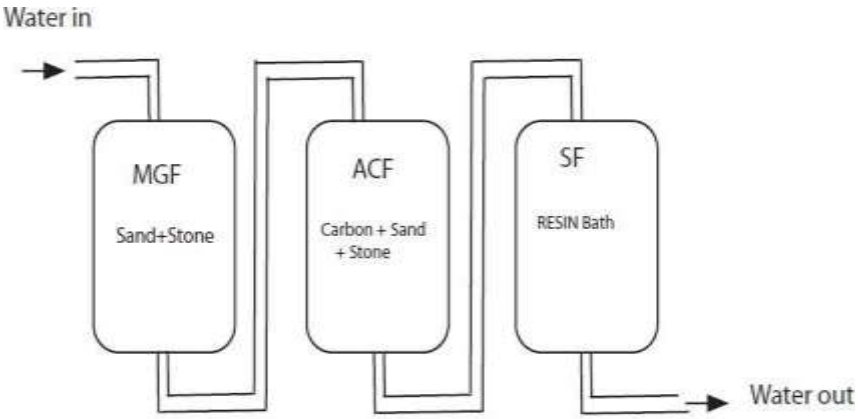
Water Treatment Plant:
Three Water Treatment Plants in Sahaba Yarn ltd.

Plant 1 : Sahaba Knit dyeing – Capacity 250000 lit/hr
Plant 2 : Sahaba Yarndyeing– Capacity 150000 lit/hr

Inplant 1&2
Raw water tank capacity-288222&660000lit
Treated water reserved tank capacity-960000 lit

Plant Description: Demineralization by Resin treatment

Three vessels system –
Vessel– 1 – Multi-Grade Filter(MGF)– For Iron Removal Vessel–2–Activated Carbon Filter(ACF)– For TDSremoval Vessel–3–SoftenerFilter(SF-Resin)–For Hardnessremoval



Water Demineralization Treatment Plant

Water distribution system:

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

STEAM BOILER

Steam:

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

Main parts of the boiler:

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

No of boiler	:	03
Type of boiler	:	Horizontal, Fire tube boiler
Brand	:	LOOSE INTERNATIONAL(Germany)

Capacity	:	10 ton/hr
Fuel	:	natural gas, Diesel.
Steam Consumption	:	2300 kg/hr. for 1200- 1500 products.
Steam pressure	:	7-8 bar
Water pressure	:	3-4 bar
Steamtemp	:	180°-190°C
Boiler Temp	:	300°C

Chemical Used
For anticipant, Tandex SD 15 Tandex BWS Tandex BWT
For Wash, Sulphuric acid+Para sulphates+Caustic+Nelbross+Nalco Feedwater Quality : pH – 7-8
TDS – 430-530

Hardness-<2ppm
Power Consumption : 40

ELECTRICITY/GENERATOR

Total Generator: 4

- Types : Diesel Generator – CAT (USA) – capacity – 1710 KW

Gas Generator – WAVKESHA – Capacity – 1100 KW (2) & 900 KW

Gas Generator used in SYL

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

Compressed Air/Compressor

Natural gas is drawn by pipe through the filter above the compressor & the air is compressed. In such a case the air becomes slightly hot. Hence cold water is drawn to reduce the temperature of compressed air. Thus the cold water becomes slightly hot & goes through outlet pipe to the overhead reservoir. Then the water falls slowly through a compressed air along with some vapors are transferred to the reservoir where the vapors are condensed & outlets drop by drop.The moist compressed air is transferred to the dryer&

Compressor

Brand: BOGGE (Germany) CECATTO (ITALY)

No of m/c : 04

Capacity: 27,0001/hr, 1800 1/hr. Unloading pressure :7.2 bar Loading pressure : 5.6 bar

Chemical Used: Grease, Oil AMERIL

Effluent Treatment Plant

- Type Of Plant – Biological
- Approximate Area – 20 Katha
- Set up completed by Italian Technology

Project Description:

Tank/Unit	Function
1. Screen Brush	Big particle & materials remover.
2. Lifting Pump Unit	Automatic flow lifter with level-sensored Pumps.
3. Storage & Homogenizing Tank	mixing by air circulation reduce temperature convertdissolvedparticlesintosuspension storing for 24hrs. pH 11-12
4. Neutralization tank	toneutralizethealkalinitybydozing sulphuric acid (98%) pH 7-9
5. Distributor tank	Passes & storetheneutralized effluent water.Sludge return
6. Biological & Oxidation Tank	Different types of micro-organisms are cultured. Sustentation of effluents Destroy toxic chemicals Separate organic, inorganic & synthesized particles Dyeparticlesareeatenbymicro-organisms pH 7-8.5
7. Sedimentation feeding tank	Deceleration of existing color particles & feed to sedimentation curve.
8. Sedimentation curve	Three section--separator-clarifier-scrapping bridge
9. Sludge return pump slump	Sludgeisthickened&reseduepassedinto Distributor tank.
10. Sludge thickener	Sludge condensed & made cake.

Chemical used in different Section:

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

Function of different chemicals:

98%H2S04 -Neutralize the water by controlling pH

-It is auto dispensed in the neutralization tank.

Polyelectrolyte -Used for sedimentation/sludgecoagulation

- It is used auto/manually in sludge thickener tank.

Declarant -Used for removingcolor.

-It is used auto/manually in sludge thickener tank.

Anti-foaming agent -Used for reducing/controlling foam.

-It is used auto/manually in the oxidation tank.

Sodium hypochlorite -It is used to killing harmful bacteria/insect.

-It is used in the Biological Oxidation tank.

Nutrients -when bacteria become weak it is added to a certain quantity

-It is added in the oxidation tank

Parameter	Govt. Tolerance (ppm)	Inlet (before etp) (ppm)	Outlet (ppm)
BOD	50	281	23
COD	200	356	200
TDS	2100	3200	1580
TSS	150	204	36
ELECTRIC CONDUCTIVITY	1200	6430	3160
DO	4.5-8	0.1	4.6
CHLORIDE	600	-	>200
PHOSPHATE	8	2.6	2.2
NITRITE	50	0.8	0.5
pH	6-9	10.3	8.1
Temp.	40-45	50	35

COST ANALYSIS

Introduction:

Costing for a factory which runs for business purposes. And it is also strictly followed in the SAHABA YARN LTD. Costing of the products considering the raw materials expenditure, salary and wages of officers and workers, distributions and advertisement expenses etc. All direct and indirect expenses is done in this factory. Itis determined by a troop of accountants with advice and consultancy of executive director.

Costing Of the Product:

The following points are considered for costing any dyed product in SAHABA YARN LTD.

1. Total dyes & chemical cost
2. Total utility cost
3. Salary
4. Payment
5. Transport cost
6. Lunch
7. Entertainment cost
8. Miscellaneous cost
9. Government cash incentive

Price of the Product

Generallypriceofproductisdeterminedbytherequiredprofitaddingtothetotal expenses. So, Priceofproducts=(Directexpenses+ Indirect expenses+ Factory Overhead) + Requiredprofit

Price Range of Different Products:

T-Shirt = $0.75 - $4.50 /Pcs Polo
Shirt =$2.00 - $6.50 /Pcs Kids
Wear ==$0.75- $2.15 /Pcs

Costing of the Product:

Let price of yarn is $ 3.00/ kg.
Process loss of yarn for knitting (10%)= $0.30
Knitting fabric cost = $3.30
Cost of dyes & chemicals = $2.50
Process loss for dyeing (12%)=$0.30
Dyed fabric cost = $ 6.10
Packing cost = $0.05
Production cost of fabric=$6.
Fabric price(with25%
margin)=$ Fabric consumption/
doz. =
(Body length + Sleeve length) x Chest length x 2 x GSM x12 /10000000

Garments specification:

Body length=78 cm Sleeve length=33 cm Chest length=62 cm GSM=210

Fabric consumption/ doz. = {(78+33) x62x2x210x12}/ 10000000
= 3.469 kg
Fabric consumption/doze(with 10% wastage)=
3.816kg Body fabric cost / doz. =$(7.79x 3.816)
= $29.73

Cost of collar& cuff/doze = $ 4.00 Cost of Trims=$ 2.25
Cost of Trims (with 5% Process loss) = $2.36 Production Cost of Garments/ doze=$36.09
Garments Price/doz (with 25% Profit) =$45.12

Knitting charge of different types of fabric

Serial no.	Types of fabric	Charge/kg(Tk)
01	Plain Single jersey	8-12
02	Plain Single jersey with lycra	25
03	1×1 Rib	12
04	6×3 Rib	20-22
05	Interlock	14-16
06	Polo pique	16
07	Single lacoste	16
08	Plain Single jersey yarn dyed feeder stripe	50
09	Plain Single jersey yarn dyed engineering stripe	90
10	Pointed rib	50-60
11	Waffle	30
12	Fleece	18
13	French terry	22-25
14	Interlock engineering stripe	160
15	Plain Single jersey yarndyed engineering stripe with lycra	200
16	Flat back rib	35
17	Engineering stripe flat back rib	180
18	Reversible fabric	50-60

Serial no.	Types of collar & cuff	Charge/set(Tk.)
01	Plain collar & cuff set(1 collar, 2 cuff)	3.50
02	Yarn dyed plain collar & cuff set(1 collar, 2 cuff)	5
03	Edge 3 tipping collar & cuff	7
04	V-neck	.85

YARN PRICE:

Cotton	
Count (Ne)	Price/kg ($)
16/1	3.25
18/1	3.25
20/1	3.50
24/1	3.60
26/1	3.65
30/1	3.75
34/1	3.80
40/1	4.10
50/1	4.35
Organic cotton	
24/1	3.65
30/1	3.80
34/1	3.95
40/1	4.18
Elastane	
20 Denier Lycra	11.00

Remarks:

Costing is very important for a productive factory. Without proper costing all production curriculums will go to vain. Because a factory cannot reach to its goal without achieving good profit

MARKETING ACTIVITIES

MARKETING

Marketing plays a vital role in the field of displaying/showing the good criteria of the products to the buyer & to communicate with the buyer .there about 30 people in the marketing section of the industry.

Marketing Strategy:

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

Mainly senior marketing officers, merchandisers & higher officials deal with the buyer there are some fixed buyers of the industry. The buyers give their orders continuously all over the year. The Marketing officers & by both side understanding the rate & the order quantity are fixed.

Duties & Responsibilities Of Marketing Officer:

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

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

Actually the responsibilities & duties of marketing officer begins from getting order of buyer & ends after receiving goods by the buyer So he should be always smart energetic & sincere.

IMPORTING COUNTRIES:

Sahaba Yarn LTD. Is a100%exportorientedindustry. All the goods produce in this industry are exported to various country.

- Europe Countries like UK France Germany etc
- U.S.A.
- Japan

Product Label:

Product label differs from fabric to fabric. The product labels are prepared according to the quality & the buyer requirements.

Local Market:

Sahaba Yarn Ltd is a 100% export oriented industry. All the goods produced in this industry are exported into various foreign countries. So, goods are not supplied into local market.

Marketing Strategy:

Marketing strategy is a very important factors to sale the products to the buyer . If the marketing strategy is not so developed , it will be very hard to reach the goal

. In case of garments marketing the dealings with the buyer is a very important factor.

In SAHABA YARN LTD. mainly senior marketing officers, merchandiser & higher officials deal with the buyer. Thereareasomefixedbuyersoftheindustry. The buyers give their orders continuously all over the year . The marketing officers & the merchandisers communicate with the buying houses to collect the orders. By both side understanding the rate & the order quantity are fixed.

BUYER:

SAHABA YARN is100%exportorientedindustry. All the goods produced in this industry are exported into various foreign countries. Name of the main buyers of this mill are given below:

- H&M
- OKAIIDI
- CAMAIEU
- CARREFOUR
- JULES
- DECATHLON
- SPRIT
- QUICK SILVER
- BIZBEE
- KNIT LINE
- S.OLIVER
- AMS INTERNATIONAL
- RIPCURL
- BETTER BARCLAY

REMARKS:

SYLhasawelllearned marketing& merchandising team. They alwayscommunicate with the buyers SYL has some fixed buyers The marketing section also looks for the quality & quantity of buyers

CONCLUSION

We have completed our industrial attachment successfully by the grace of Almighty Allah. Industrial attachment will give us our expected destiny of practical life .By the completion of two months of Industrial attachment at SAHABA YARN LIMITED, we have got the impression that the factory is one of the most modern export oriented knit composite in Bangladesh. Though it was established only a few years ago ,it has earned " very good reputations "for its best performance over many other export oriented textile mills .

Mill is settled with utility to give all convenient supports to the productions for twenty- four hours .Sahaba YarbL has its own water pre-treatment plant & 26,300 cubic feet water reservoirs in its Godnail campus .The Godnail premises has its own power generation plant where 1,900 kw power generators guarantee smooth & uninterrupted power supply to its every operation.
However there are some points to be mentioned:

During the transportation of the fabric on the dyeing floor & also during the loading of the machine, fabrics are soiled by the contact with floor. This makes the fabric/part of the fabric dirty. It may require more scouring/bleaching agent or may create stain making it faulty.

- The- dyeing floor is watery most of the time. It should be kept clean all the time.
- Many time the dosing pipelines are clogged due to the careless dosing of the chemicals. The supervisors should supervise the floor more sincerely.
- The machine stoppage time should be analyzed & minimized. The maintenance should be carried out when the machine is out of action (wherever possible).

OUR APOLOGY :

- The management of SYL were very helpful & our respective seniors gave us time whenever they got.
- Due to secrecy act, all the data on costing & marketing activities has not been supplied & hence this report excludes these chapters.
- Some of the points in different chapter are not described as these were not available.
- The whole process is not possible to bind in such a small frame as this report, hence our effort spent on summarizing them.

ButitmustbesaidthatSYLisabestplacetogetthepracticalknowledgeaboutthe dyeing as they have a lot of production of all quality