



Report on
Industrial Attachment at Fareast group (Amazing Fashion Ltd)
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Group : A

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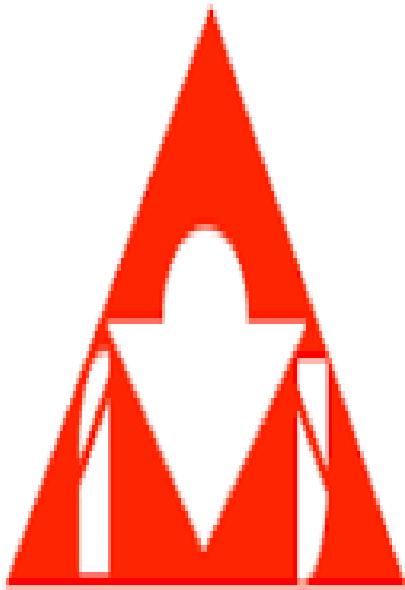
Academic Supervisor

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This Report Presented in Partial Fulfilment of the Requirements for the Degree of Bachelor of Science in Textile Engineering. Advance in Apparel Manufacturing.



AMAZING FASHION LIMITED

100%EXPORT ORIENTED KNITWARE MANUFACTURER

APPROVAL

This Industrial Report entitled "Report on Industrial Attachment at Fareast group.' At Sonargaon University in December, 2020 prepared and submitted by Kazi Ahadul Islam, Al-Arafat Shabuj, Rahat Sarder , Md. Asduzzaman, Md. Mahadi Hasan In partial fulfilment of the requirement for the degree of BACHELOR OF SCIENCE IN TEXTILE ENGINEERING has been examined and hereby recommended for approval and acceptance.

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Kamrul Hassan

Assistant Professor &Coordinator

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Sonargaon University (SU)

Declaration

Dear **Kamrul Hassan sir**

I sincerely declare that:

This Industrial Attachment has been done by me, I also declare that neither this Industrial Attachment nor any part of this Industrial Attachment has been submitted elsewhere for award of any degree or diploma.

Name ID Signature-

Name	ID	Signature
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Dedication

At first I want to dedicate this Industrial Training report to almighty Allah for giving me a better opportunity to prove ourselves. Without his help nothing is possible. I also dedicate this report to Kamrul Hassan, Assistant Professor & Coordinator (Department of Textile Engineering) of Sonargaon University who helps me to complete this report. And my parents who give me chance to study in Textile Engineering and support me all time. Specially dedicate this report to Md. Mehadi shahajahan, General Manager of amazing Fashion Ltd. And all the people who have helped me in the Amazing Fashion Ltd. To complete this report.

Acknowledgement

At first my gratefulness goes to Almighty Allah to give me strength and ability to complete my three months long industrial training and this report. Now I wish to take this opportunity to thank a lot of people who have assisted and inspired me in completion of our training period. Kamrul Hassan, Assistant Professor & coordinator of Dept. of Textile, my supervisor, to whom I am extremely indebted for his tremendous support and guidance throughout my training period. Being working with him I have not only earned valuable knowledge

but also inspired by his innovativeness which helped enrich my experience to greater extent. His idea and way of working was truly remarkable. I am also expressing our gratitude to Prof. Kamrul Hassan, Assistant Professor & Coordinator, Department of Textile Engineering, for his support and continuous guidance throughout me long journey in Sonargaon University and industrial training. I should like thank the management of Amazing Fashion Ltd, for giving me opportunity to do the industrial training successfully and also their valuable suggestions. It's a great pleasure to express my satisfaction to The Amazing Fasion Ltd Authority for their sincere and cordial co-operation and I am very much indebted to Mehadi shahajahan General Manger , for his association in completion of my training successfully. My training would never been completed without his convenient helps and supports.

Finally, I must acknowledge my Parents with due respect for their constant support, patients and believe on my ability which drives me in the successful completion of this report.

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Information about Factory

The underlying principles of producing quality product at a competitive price margin and commitment towards providing high customer satisfaction has led to such an extensive growth of Amazing Fashions over the past decade. The company has been successfully operating under the leadership of its C.E.O Mr. A.L.M.ZiaulHaque and has experienced a growth of over 3 folds in terms of production capacity as well as on fixed assets. The C.E.O by virtue is a Textile Engineer and has consistently been involved in the garment manufacturing industry since 1987. His technical background, instant and effective decision making ability, people skills in managing the organization's employees and customer relations have served as an invaluable asset for Amazing Fashions and continues to do so. What makes Amazing Fashions unique in comparison to most of its local competitors is its continuous effort to innovate process sequencing that increases production efficiency and proactively reduces operational errors.

The company upholds the utmost standards when it comes to compliance and is perhaps one of the key driving forces that has sustained its growth at a crucial period where competitors in the country has faced a steep decline. The CEO believes that an organization grows alongside its clients and thus values addressing customer needs as its primary priority. Amazing Fashions first emerged into the European market by catering to German clothing retailers such as Karstadt, Quelle, M&P, Buggati, Cotton club, K & L, Neckerman and etc. With its expansion, the company developed customers in the United Kingdom such as Peacock, M & CO, Sense berry and Bensherman. Gradually over time, we started manufacturing fashion clothing for French, Spanish and Italian retailers like ZARA, C&A, Charles VOGELE, OVS, COIN, PIMKIE, V&D, NOPPIES and UPIM. The company has had a very successful partnership with the mentioned clientele and have gained a trustworthy and reliable reputation in the market. Currently, our major stakeholders of production unit are OVS, KARSTARD, Charles VOGELE and ZAARA. Our expertise lies in producing circular knitted items for men, ladies and kids. Alongside the garment industry we have tried our best to establish our backward linkage facilities of fabric manufacturing like knitting (flat and circular), yarn dyeing and printing. Thus far, we have been competent in meeting our goals and have been periodically expanding with great support from our existing customers. We are committed to delivering high quality products and growing our market share as manufacturers in the international clothing industry.

Management

Amazing Fashions LTD, A team of versatile individuals that have fused their knowledge and experience together to form the company under the supervision of Mr ALM Ziaul Hoque, Managing Director. The great minds & the visionary leaders that have played their role in making this successful companies are:



ROSELINA HAQUE
CHAIRMAN



A L M ZIAUL HOQUE
MANAGING DIRECTOR



MD MOMINUL HOQUE
GROUP DIRECTOR



SM ZUBAIR BIN ZIA
DIRECTOR OPERATIONS



SM NISHAT BIN ZIA
MARKETING DIRECTOR

COMPLIANCE CERTIFICATION

Certificate of Registration



This is to certify that the
Quality Management System of:

FAR EAST TEXTILES & CLOTHING
HOUSE-445, ROAD-07, BARIDHARA DOHS,
DHAKA – BANGLADESH

has been assessed and found compliant with the requirements of

ISO 9001:2008

Approval is hereby granted for registration providing the
Certification rules and conditions are observed at all times.

Certification Scope:

BUYING AGENT & EXPORTER OF READYMADE GARMENTS.

Certificate No. **06049**

Issue Date: **November 10, 2009**

Expiry Date: **November 07, 2012**

A handwritten signature in black ink.

Authorised Signature

Moody International Certification Ltd.

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The use of the Accreditation Mark indicates accreditation in respect of those activities covered by the Accreditation Certificate 014.
The certificate remains the property of Moody International Certification Limited to whom it must be returned on request.



Sustainable Management System Inc.
Certificate of Registration

This is to certify that the
MANAGEMENT SYSTEM

of
Amazing Fashions Limited

Plot 10, Dagerchala Road, National University, Gazipur, Bangladesh

for

Manufacture and Export of Face Mask, Surgical Mask, Surgical and Non-surgical Gown

has been assessed and registered against the provision of

ISO 13485:2016

International Standard

With

Registration Number : 180620202
Certification Date : 18/06/2020
Re-Certification Due Date : 17/06/2023

Certificate Number : 202006182
Code : 04
Exclusions : 7.3, 7.5.3-7.5.7 & 7.5.9.2
Issue No : 01

Certification Approved By

[Signature]

President & CEO



This is an accredited certificate authorised for issue by Accreditation Service for Certifying Bodies LLC who have assessed Sustainable Management System Inc. against defined criteria and in cognisance of ISO 17021:2015 'Conformity Assessment - Requirements for bodies providing audit and certification of management systems'. This certificate is only valid when confirmed by the register listed in the International Register of Quality Assessed Organisations: www.irqao.com.

This certificate is the property of Sustainable Management System Inc.
3706 Suite#681 69 Street | Woodside | New York 11377 | USA

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KARSTADT QUELLE^{AG}

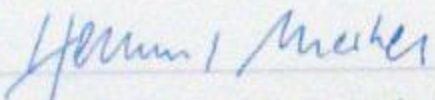
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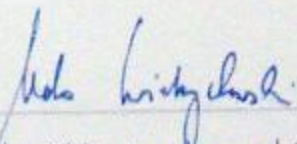
Far East Textiles & Clothing

in recognition of continued excellent performance
with the delivery of quality merchandise for Europe's
largest department store and mail order group.

Essen, Germany
February 2006



Prof. Dr. Helmut Merkel
Member of the Management Board
KarstadtQuelle AG



Udo Wietrychowski
Director of Imports
KarstadtQuelle AG



GOLD CERTIFICATE OF COMPLIANCE

awarded to:

Amazing Fashions Limited

Avedis H. Seferian
President & CEO

Charles C. Masten
Chairman

Certificate Number:	13399
Certification Period:	July 12, 2012 to July 12, 2013
Facility Address:	Plot: 10, Dagerchala Road Mouza: Dagerchala P.Office: National University Gacha Union, Gazipur Bangladesh 1704
Production Processes:	Cutting, Sewing, Finishing, QC, and Packing
Periods Reviewed:	February, March 2011, and April 2012
Sample Size:	35
Weekly Hours Noted:	Average: 57.6 Maximum: 60

Subject to the terms and conditions of the WRAP Certification Program and full compliance with the WRAP Production Principles

CERTIFICATE

Hohenstein
Textile Testing Institute
GmbH & Co. KG

HOHENSTEIN

Schloss Hohenstein · 74357 Boennigheim · Germany

Institute of the International Association for Research and Testing in the Field of Textile Ecology

The company

Amazing Fashions Ltd.

Plot-10, Dagerchalla Road, P.O. National Univ.

Gazipur - 1704, BANGLADESH

is granted authorisation according to Oeko-Tex® Standard 100 to use the Oeko-Tex® mark, based on our test report **16.0.84030**



Tested for harmful substances
according to Oeko-Tex® Standard 100

11.HBD.88971

HOHENSTEIN HTTI

for the following articles:

Knitted ready made garments (T-shirt, polo shirt, sweatshirt, tank top, leggings and long pants) made of 100 % cotton, cotton/elastane, white and dyed, 100 % cotton, yarn dyed as well as pigment and rubber printed, including accessories (sewing thread, woven and printed label, PES button, elastic tape, twill tape, embroidery and interlining); exclusively produced from material certified according to Oeko-Tex® Standard 100.

The results of the inspection made according to Oeko-Tex® Standard 100, product class II have shown that the above mentioned goods meet the human-ecological requirements of the standard presently established for products with direct contact to skin.

The certified articles fulfil the requirements of Annex XVII of REACH (incl. the use of azo-dyes, nickel, etc.) as well as the American requirement regarding total content of lead in children's articles (CPSIA; with the exception of accessories made from glass).

The holder of the certificate, who has issued a conformity declaration according to ISO 17050-1, is under an obligation to use the Oeko-Tex® mark only in conjunction with products that conform with the sample initially tested. The conformity is verified by audits.

This authorisation is valid until 31.05.2017

Boennigheim, 20.08.2016



Dr. Stefan Droste
Managing Director

Dipl.-Ing. (FH) Elisabeth Weisheit
Head of Certification Body Oeko-Tex®



Company Profile

FAREAST TEXTILES AND CLOTHING STARTED AS A BUYING HOUSE UNDER THE SUPERVISION OF C.E.O ALM ZIAUL, ESTABLISHED IN 1998. WITH THE CEOS VISION THE COMPANY EXPANDED TO A MANUFACTURING WING NAMED AMAZING FASHIONS, 100% EXPORT-ORIENTED RMG. THE STYLE BASED FACTORY WITH THE OBJECTIVE TO PROVIDE CHOICES EXPANDED IN THE SECTORS OF FORMAL WEAR, NIGHTWEAR, SPORTS WEAR, AND FUNCTIONAL UNIFORMS SUCH AS PERSONAL PROTECTIVE COVERALLS AND GOWNS (PPE). THE COMPANY IS MOVING TOWARDS EXPANSION OF MEDICAL WEAR CURRENTLY.

CUSTOMER RELIABILITY: TWO OF OUR MAJOR CUSTOMERS CONTRIBUTING 80% OF OUR BUSINESS ARE KARSTADT AND OVS WHO HAVE BEEN WORKING WITH US FOR OVER 20 YEARS FROM THE BEGINNING DUE TO OUR COMMITMENT AND RELIABILITY. WE ARE THEIR BIGGEST TEXTILE SUPPLIERS GLOBALLY.

WORKFORCE: CURRENTLY AMAZING EMPLOYS around 4000 WORKERS AND 400 STAFF OF WHICH 70% JOINED OUR COMPANY AS THEIR FIRST JOB.

R&D: STRONG TEAM AND FACILITY OF 32 ENGINEERS AND INHOUSE TESTING LAB HELPING WITH DEVELOPMENT OF NEW PRODUCTS AND UPGRADE STANDARDS.

SUPPLY CHAIN: SOURCING HUB IN SHANGHAI, HANGZHOU AND HONG KONG TO FACILITATE OUR CUSTOMERS WITH EVERY VARIETY OF PRODUCT IN TEXTILES.

CURRENT SALES NETWORK: GERMANY, ITALY, FRANCE, SOUTH KOREA, HONG KONG AND BANGLADESH
INTERNATIONAL CERTIFICATIONS: FDA,SGS,DGDA, BCSI, OEKO-TEX, HIGGS , ACCORD & AMFORI BSCI

Sister Concern

- Amazing Fashion
- Fareast Textile & Clothing
- Universal Yarn Dyeing Ltd.
- Shield20
- La Vogue
- Wings Electronic Ltd.
- EndeaVour Clothing LTD
- Amazing Printing & Embroidery LTD
- WingGroup

Customer

1. OVS
2. KARSTAST
3. TOP TEN
4. KIDILIZ GROUP
5. HANGTEN
6. GELARIA
7. OLZEN
8. SHINESEAGE
9. POLHAM
10. ZARA

Address**Corporate Office**

Address: House # 445, Road # 07, DOHS Baridhara, Dhaka-1206, Bangladesh.

Tel: +88-02-8416764, 8416614, 8415068

Fax: +88-02-8412971

Email: info@fareastbd.com

Factory Address (AFL)

Address: Plot # 10, Dagerchala Road, Mouza # Baliara, PO # National University, Gazipur-1704, Bangladesh.

Tel: +880-2-9293661, 9293658.

Fax: +880-2-9293660

Factory Address (UYDL)

Address: Plot No: 57-60, Bscic Industrial Estate, Tarutia, Korotia, Tangail.

Tel: (880-921) 62380

Yarn Manufacturing Process

Yarn is a long continuous length of fibers. It is output from spinning. Two types of yarn are produced from spinning. If you want to make a yarn you will have two methods to follow. One is the Carded yarn manufacturing process and another is the Combed yarn manufacturing process. Flow chart of yarn manufacturing process is as follows:

Flow Chart of Yarn Manufacturing Process

Carded and Combed yarn

Combed yarn is most precious, finer, and thinner than the carded yarn. Because the Carded Yarn is produced by following some less manufacturing steps than the Combed Yarn.

The Difference between Carded and Combed Yarn:

Sl. no.

Carded yarn

Combed yarn

- 1.The yarn that is obtained without combing is called carded yarn.
2. Quality of carded yarn not better than combed yarn.
- 3.Short fiber % is high
- 4.Combing action is not done here.
- 5.Less strength.
- 6.Irregular.

Regular.

The yarn manufacturing process contains a lot of processes involved in converting the fiber into yarn. The natural fibers obtained from natural plant & animal sources. Another artificial came with several chemical processes.

Yarn manufacturing flowchart is two types. In the below-provided link, we simply discussed the whole yarn manufacturing process according to the flow chart. Where natural and man-made both could be covered.

Carded yarn Manufacturing

Combed yarn Manufacturing

In most of the case cotton is used to produce yarn. Yarn produces natural impurities that were removed from the yarn in subsequent pre-treatment processes. Cotton may the natural fiber that has rooted in yarn manufacturing from fiber bale opening. These processes are followed by a series of continuous operations such as blending, mixing, cleaning, carding, drawing, roving, and spinning, and so on.



The process of applying color to fiber stock, yarn or fabric is called dyeing." There may or may not be thorough penetration of the colorant into the fibers or yarns.

Dyes can be used on vegetable, animal or man made fibers only if they have affinity to them. Textile dyes include acid dyes, used mainly for dyeing wool, silk and nylon and direct or substantive dyes, which have a strong affinity for cellulose fibers. Mordant dyes require the addition of chemical substances, such as salts to give them an affinity for the material being dyed. They are applied to cellulose fibers, wool or silk after such materials have been treated with metal salts. Sulfur dyes, used to dye cellulose, are inexpensive, but produce colors lacking brilliance. Azoic dyes are insoluble pigments formed within the fiber by padding, first with a soluble coupling compound and then with a diazotized base. Vat dyes, insoluble in water, are converted into soluble colorless compounds by means of alkaline sodium hydrosulfite. These colorless compounds are absorbed by the cellulose, which are subsequently oxidized to an insoluble pigment. Such dyes are colorfast. Disperse dyes are suspensions of finely divided insoluble, organic pigments used to dye such hydrophobic fibers as polyesters, nylon and cellulose acetates.

Reactive dyes combine directly with the fiber, resulting in excellent colorfastness. The first ranges of reactive dyes for cellulose fibers were introduced in the mid-1950. Today, a wide variety is available.

Methods of YARN Dyeing

1) Bale Dyeing:

This is a low cost method to dye cotton cloth. The material is sent without scouring or singeing, through a cold water bath where the sized warp has affinity for the dye. Imitation chambray and comparable fabrics are often dyed this way.2) Batik Dyeing:

This is one of the oldest forms known to man. It originated in Java. Portions of the fabric are coated with wax so that only un-waxed areas will take on the dye matter. The operation may be repeated several times and several colors may be used for the bizarre effects. Motifs show a mangle, mottled or streaked effect, imitated in machine printing.

3) Beam Dyeing:

In this method the warp is dyed prior to weaving. It is wound onto a perforated beam and the dye is forced through the perforations thereby saturating the yarn with color.

4) Burl or speck Dyeing:

This is done mostly on woolens or worsteds, colored specks and blemishes are covered by the use of special colored links which come in many colors and shades. It is a hand operation.

5) Chain Dyeing: This is used when yarns and cloth are low in tensile strength. Several cuts or pieces of cloth are tacked end-to-end and run through in a continuous chain in the dye color. This method affords high production.

6) Cross Dyeing:

This is a very popular method in which varied color effects are obtained in the one dye bath for a cloth which contains fibers with varying affinities for the dye used. For example, a blue dyestuff might give nylon 6 a dark blue shade, nylon 6, 6 a light blue shade, and have no affinity for polyester area unscathed or white.

7) Jig Dyeing:

This is done in a jig, kier, vat, beck or vessel in an open formation of the goods. The fabric goes from one roller to another through a deep dye bath until the desired shade is achieved.

8) Piece Dyeing:

The dyeing of fabrics in the cut, bolt or piece form is called piece dyeing. It follows the weaving of the goods and provides a single color for the material, such as blue serge, a green organdy.

9) Random Dyeing:

Coloring only certain designated portions of the yarn. There are three ways of doing this type of coloring:

Skeins may be tightly dyed in two or more places and dyed at one side of the dye with one color and at the other side with another one. Color may be printed onto the skeins which are spread out on the blanket fabric of the printing machine.

Cones or packages of yarn on hollow spindles may be arranged to form channels through which the yarn, by means of air-operated punch, and the dyestuff are drawn through these holes by suction. The yarn in the immediate area of the punch absorbs the dye and the random effects are thereby attained.

10) Raw Stock Dyeing:

Dyeing of fiber stock precedes spinning of the yarn. Dyeing follows the degreasing of wool fibers and drying of the stock.

11) Solution Dyeing:

This is also called dope dyeing or spun dyeing; the pigment color is bonded-in in the solution and is picked up as the filaments are being formed in the liquor. Cellulosic and non-cellulosic fibers are dyed to perfection by this method. The colors are bright, clear, clean and fast.

12) Yarn dyed:

Yarn which has been dyed prior to the weaving of the goods; follows spinning of the yarn. It may be done in either partial immersion or total immersion of the yarn.

Process of Dyeing

The dyeing of a textile fiber is carried out in a solution, generally aqueous, known as the dye liquor or dye bath. For true dyeing to have taken place, coloration of fabric and absorption are important determinants.

Coloration:

The coloration must be relatively permanent: that is not readily removed by rinsing in water or by normal washing procedures. Moreover, the dyeing must not fade rapidly on exposure to light.

Absorption:

The process of attachment of the dye molecule to the fiber is one of absorption: that is the dye molecules concentrate on the fiber surface. There are four kinds of forces by which dye molecules are bound to the fiber:

1) Ionic forces 2) Hydrogen bonding 3) Vander Wals' forces and 4) Covalent chemical linkages

Dyeing of Wool:

In the dyeing of wool which is a complex protein containing about 20 different amino acids, the sulfuric acid added to the dye bath forms ionic linkages with the amino groups of the protein. In the process of dyeing, the sulfate anion (negative ion) is replaced by a dye anion. In the dyeing of wool, silk and synthetic fibers, hydrogen bonds are probably set up between the azo, amino, alkyl amino and other groups and the amino Co-NH-groups. Covalent chemical links are brought about in the dye-bath by chemical reaction between a fiber-reactive dye molecule, one containing a chemically reactive center and a hydro-oxy group of a cotton fiber, in the presence of alkali.

The Chemistry of the Dyeing Process

Exhaustion in any dyeing process, whatever the chemical class of dye being used, heat must be supplied to the dye bath; energy is used in transferring dye molecules from the solution to the fiber as well as in swelling the fiber to render it more receptive. The technical term for this process is exhaustion. Levelness: An Important Quality

Evenness of dyeing, known as levelness is an important quality in the dyeing of all forms of natural and synthetic fibers. It may be attained by the control of dyeing conditions viz.

By agitation to ensure proper contact between dye liquor and substance being dyed and by use of restraining agents to control rate of dyeing or strike. Solvent Dyeing Serious consideration has recently been given to the methods of dyeing in which water as the medium is replaced by solvents such as the chlorinated hydrocarbons used in dry cleaning. The technological advantages in solvent dyeing are: 1. Rapid wetting of textiles

Less swelling

Increased speed of dyeing per given amount of material

Savings in energy, as less heat is required to heat or evaporate per-chloro-ethylene. Thus it eliminates the effluent (pollution) problems associated with the conventional methods of dyeing and finishing.

Machinery and Equipment: Modern dyeing machines are made from stainless steels. Steels containing up to 4% molybdenum are favored to withstand the acid conditions that are common.

A dyeing machine consists essentially of a vessel to contain the dye liquor, provided with equipment for heating, cooling and circulating the liquor into and around the goods to be dyed or moving the goods through the dye liquor. The kind of machine employed depends on the nature of the goods to be dyed. Labor and energy costs are high in relation to total dyeing costs: the dyers aim is to shorten dyeing times to save steam and electrical power and to avoid spoilage of goods.

The conical-pan loose-stock machine is a widely used machine. Fibers are held in an inner truncated conical vessel while the hot dye liquor is mechanically pumped through. The fiber mass tends to become compressed in the upper narrow half of the cone, assisting efficient circulation. Leveling problems are less important as uniformity may be achieved by blending the dyed fibers prior to spinning.

The Hussong machine is the traditional apparatus. It has a long, square-ended tank as a dye bath into which a framework of poles carrying hanks can be lowered. The dye liquor is circulated by an impeller and moves through a perforated false bottom that also houses the open steam pipe for heating. In modern machines, circulation is improved at the points of contact between hank and pole. This leads to better leveling and elimination of irregularities caused by uneven cooling. In package-dyeing machines dye color may be pumped in rather two directions:

Through the perforated central spindle and outward through the package or

By the reverse path into the outer layers of the package and out of the spindle. In either case levelness is important.

Some package-dyeing machines are capable of working under pressure at temperatures up to 130C.

The winch is the oldest piece of dyeing machine and takes its name from the slated roller that moves an endless rope of cloth or endless belt of cloth at full width through the dye liquor. Pressurized-winch machines have been developed in the U.S.



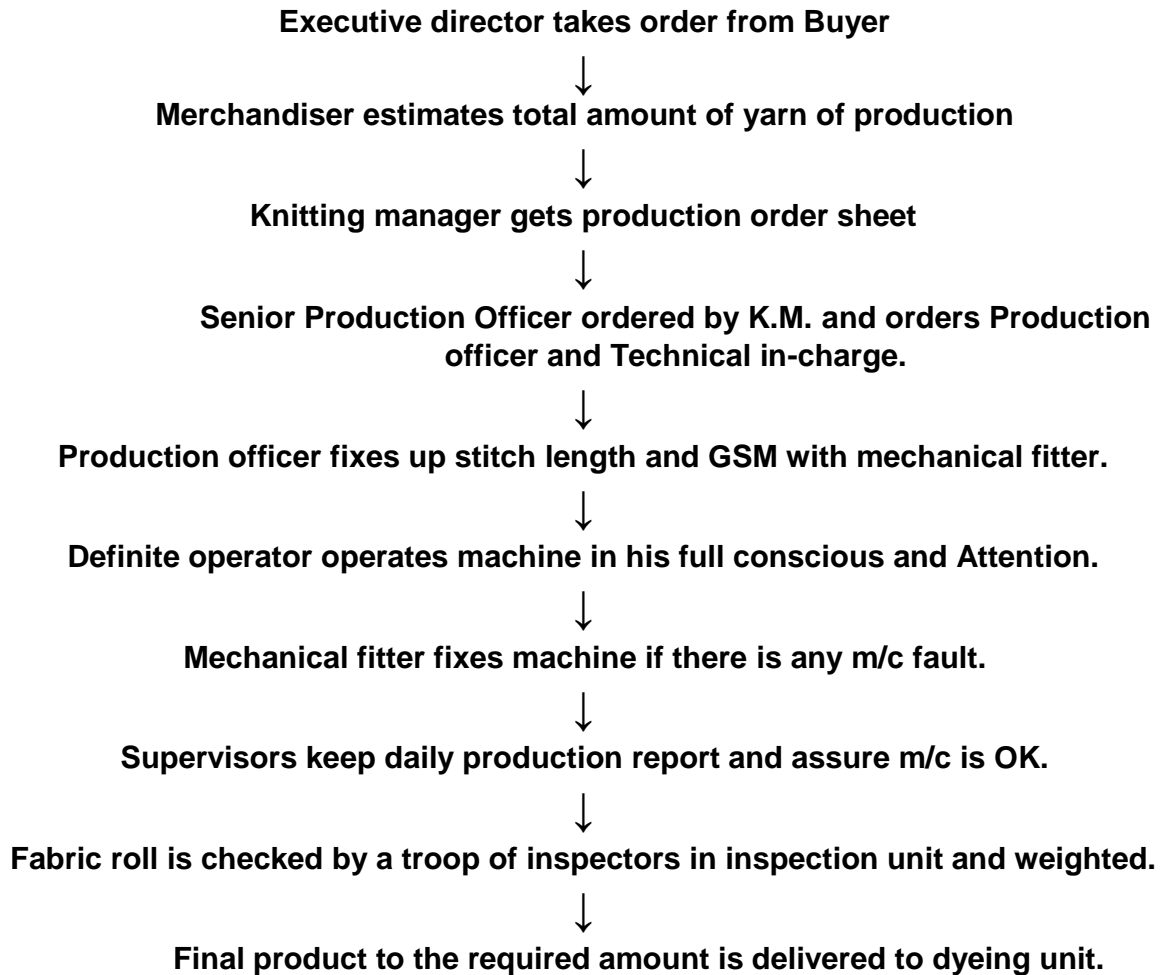
In an entirely new concept, the Gaston County jet machine circulates fabric in rope form through a pipe by means of a high-pressure jet of dye color. The jet machine is increasingly important in high-temperature dyeing of synthetic fibers, especially polyester fabrics. Another machine is the jig. It has a V-shaped trough holding the dye color and guide rollers to carry the cloth at full width between two external, powered rollers, the cloth is wound onto each roller alternately, that is, the cloth is first moved forward, then backward through the dye color until dyeing is complete. Modern machines, automatically controlled and programmed, can be built to work under pressure.



Knitting **Section**

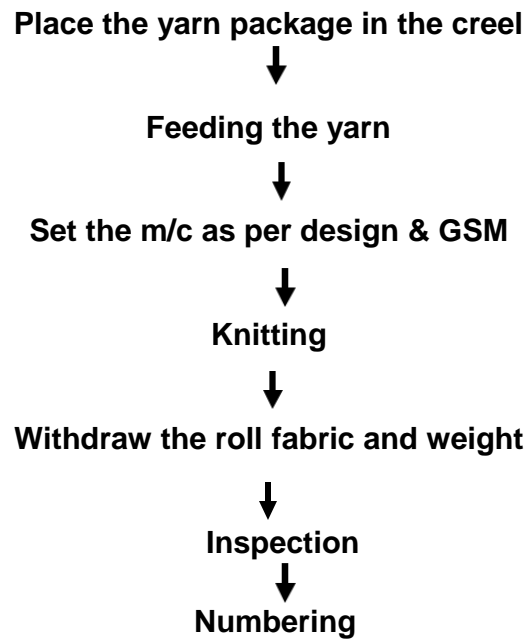
Knitting is one kind of fabric manufacturing process. This type of fabric is produced by forming loop. The Knitting Manager is responsible for production of knitting section. It starts from collecting order from buyer and will end by delivering the product in dyeing unit

Production Flowchart of Knitting Section



Product flow chart for circular knitting machine

Circular knitting is a form of knitting that creates a seamless tube. Circular knitting machine is used for manufacturing seamless tube. This machine is used for the manufacturing of knit fabrics can be divided into machines with individually driven needles and needle bar machines. It is widely used in knitting industry.



LIST OF KNITTING MACHINE:

M/C DIA	GAUGE	FEEDER	BRAND	ORIGIN	QUANTITY
30"	24 G	72	WELL RUN	TAIWAN	02 PCS
32"	24 G	64	WELL RUN	TAIWAN	02 PCS
34"	24 G	68	WELL RUN	TAIWAN	02 PCS
36"	24 G	72	WELL RUN	TAIWAN	02 PCS
38"	24 G	76	WELL RUN	TAIWAN	02 PCS
40"	24 G	80	WELL RUN	TAIWAN	02 PCS
42"	24 G	84	WELL RUN	TAIWAN	02 PCS
44"	24 G	88	WELL RUN	TAIWAN	02 PCS
30"	18G	72	WELL RUN	TAIWAN	01 PCS
32"	18G	64	WELL RUN	TAIWAN	01 PCS

34"	18G	68	RUN	WELL	TAIWAN	01 PCS
36"	18G	72	RUN	WELL	TAIWAN	01 PCS
38"	18G	76	RUN	WELL	TAIWAN	01 PCS
40"	18G	80	RUN	WELL	TAIWAN	01 PCS
42"	18G	84	RUN	WELL	TAIWAN	01 PCS
44"	18G	88	RUN	WELL	TAIWAN	01 PCS
28"	24G	84		MASAS	TAIWAN	01 PCS
20"	24G	60	RUN	WELL	TAIWAN	01 PCS
21"	24G	63	RUN	WELL	TAIWAN	01 PCS
22"	24G	66	RUN	WELL	TAIWAN	01 PCS

23"	24G	69	RUN	WELL	TAIWAN	01 PCS
24"	24G	72	RUN	WELL	TAIWAN	01 PCS
25"	24G	75	RUN	WELL	TAIWAN	01 PCS
26"	24G	78	RUN	WELL	TAIWAN	01 PCS
28"	20/ 28G	84	RUN	WELL	TAIWAN	03 PCS
30"	20/ 28G	84	RUN	WELL	TAIWAN	01 PCS
30"	24G	90	RUN	WELL	TAIWAN	03 PCS
32"	24G	90		MASAS	TAIWAN	02 PCS
32"	24G	96		MASAS	TAIWAN	01 PCS
34"	20/ 28G	96	RUN	WELL	TAIWAN	01 PCS
34"	24G	102		MASAS	TAIWAN	01 PCS
34"	24G	102	RUN	WELL	TAIWAN	04 PCS
36"	24G	108	RUN	WELL	TAIWAN	01 PCS
36"	24G	216	RUN	WELL	TAIWAN	01 PCS
38"	24G	152	RUN	WELL	TAIWAN	01 PCS
40"	24G	200		MASAS	TAIWAN	01 PCS
42"	24G	252	RUN	WELL	TAIWAN	01 PCS

TOTAL = 53 PCS.

Specification of the Machineries

Machineries used in Knitting Section

Single jersey circular knitting machine. Flat knit machine.

Fabric Inspection machine. GSM cutter.

Electric balance

Circular knitting machine

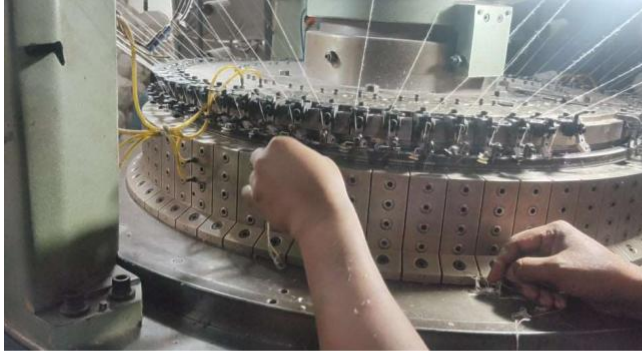


Fig: A circular knitting Machine



Important parts of a circular knitting machine

Creel: Creel is a part of a knitting machine. Here yarn packages are stored and ready to feed in the machine.



Photo: Creel.

VDQ Pulley: It is a very important part of the machine. It controls the quality of the product. Altering the position of the tension pulley changes the G.S.M. of the fabric. If pulley moves towards the positive direction then the G.S.M. is decrease. And in the reverse direction G.S.M will increase.



Photo: VEQ Pulley.

Pulley Belt: It controls the rotation of the MPF wheel.



Photo: Pulley Belt.

Brush: Its clean the pulley belt.



Photo: Brush.

Tension Disk: It confronts the tension of the supply yarn.



Photo: Tension Disk.

Inlet and Outlet Stop Motion: It is an important part of the machine. It stops the machine instantly when a yarn is break.



Photo: Inlet and Outlet Stop Motion.

Yarn Guide: Its help the yarn to feed in the feeder.



Photo: Yarn Guide.

MPF Wheel: Its control the speed of the MPF. Pulley belt gives motion to the wheel.



Photo: MPF Wheel.

MPF: It is Mamenger positive feed. It is also an important part of the machine. It's give positive feed to the machine.



Photo: MPF.

Feeder Ring: It is a ring. Where all feeders are pleased together.



Photo: Feeder Ring.

Disk Drum: Use in jacquard machine to produce various types of design.



Photo: Disk Drum.

Pattern Wheel: Pattern Wheel use in Pai Lung and Auto Stripe machine because of that that help to produce various types of design and stripe.



Photo: Pattern Wheel.

Feeder: Feeder is help yarn to feed in to the machine.

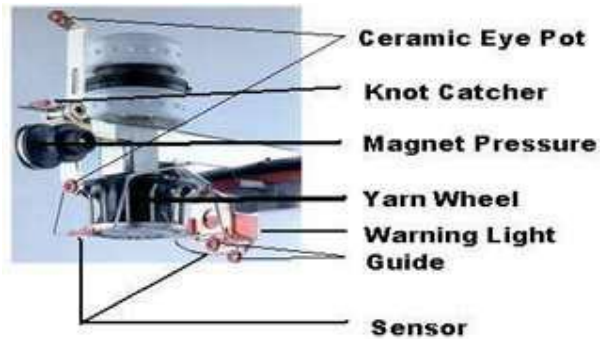


Photo: Feeder.

Needle Track: Where all Needles is placed together in a decent design.



Photo: Needle Track.

Needle: It is a principal element of the knitting machine. Its help the yarn to create a loop. And by this way fabric are produce. Prior to yarn feeding the needle is raised to clear the old loop from the hook, and received the new loop above it on needle stem. The new loop is then enclosed in the needle hook as the needle starts to descend.

Photo: Different Types of Needle.

Sinker: It is most important element of the machine. Its help to loop forming, knocking over and holding down the loop.



Photo: Sinker.

Sinker Ring: Sinker ring is a ring. Where all sinkers are pleased together.



Photo: Sinker Ring.

Cam Box: Where the cam are set horizontally.



Photo: Cam Box.

Cam: Cam is device s which converts the rotary machine drive in to a suitable reciprocating action for the needles and other elements.



Photo: Cam.

Lycra Attachment Device: Lycra is placed hear. And feeding to the machine.

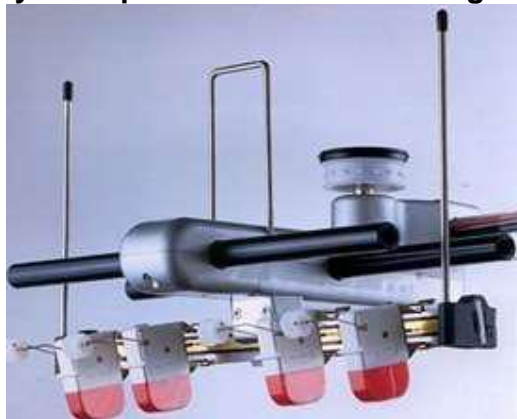


Photo: Lycra Attachment Device.

Lycra Stop Motion: It is one kind of stop motion to stop the machine when the Lycra is break.



Photo: Lycra Stop Motion.

Cylinder: Needle track are situated hear.



Photo: Cylinder.

Cylinder Balancer: It helps the cylinder to set in a proper alignment.



Photo: Cylinder Balancer.

Uniwave Lubrication: The Uniwave lubricator provides uniform lubrication to needles, cam tracks, lifters and other knitting machine components. The patented nozzle construction separates the air-oil mixture into air and droplets of oil.



Photo: Uniwave Lubrication System.

Adjustable Fan: This part removes lint, hairy fibre from yarn and others. To clean the dust by air flow.



Photo: Adjustable Fan.

Expander: To control the width of the knitted fabric. No distortion of the knitting courses. Even take down tension in the knitting machine. As a result, an even fabric structure is achieved over the entire fabric width. The deformation of the knitted fabric goods can be reduced.

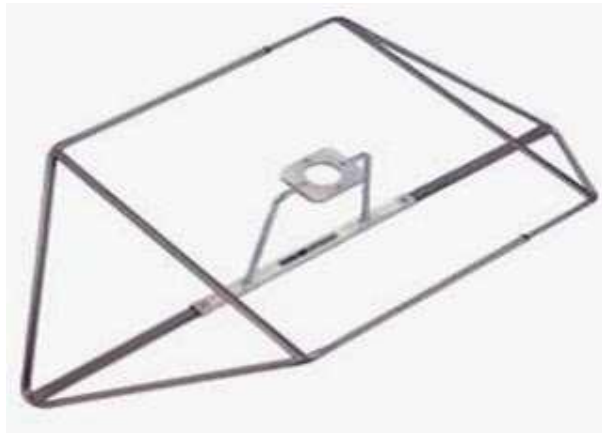


Photo: Expander.

Needle Detector: This part detect the any type of faults of needles.



Photo: Needle Detector.

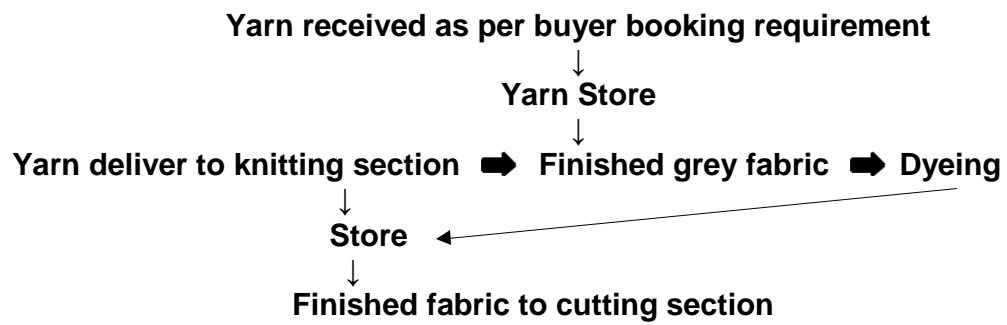
Air Gun Nozzle: To feed the yarn; sometimes it is used for cleaning purpose.



Photo: Air Gun Nozzle.

Store

Storing flow chart is given below-



Dyeing is a method which imparts beauty to the textile by applying various colors and their shades on to a fabric. Dyeing can be done at any stage of the manufacturing of textile- fiber, yarn, fabric or a finished textile product including garments and apparels. The property of color fastness depends upon two factors- selection of proper dye according to the textile material to be dyed and selection of the method for dyeing the fiber, yarn or fabric.



Dyes

Dyes are used for coloring the fabrics. Dyes are molecules which absorb and reflect light at specific wavelengths to give human eyes the sense of color. There are two major types of dyes – natural and synthetic dyes. The natural dyes are extracted from natural substances such as plants, animals, or minerals. Synthetic dyes are made in a laboratory. Chemicals are synthesized for making synthetic dyes. Some of the synthetic dyes contain metals too.

Natural Dyes

It is the most common approach to apply a color pattern onto a fabric. If done on colored fabric, it is known as overprinting. The desired pattern is produced by pressing dye on the fabric in a paste form. To prepare the print paste, a thickening agent is added to a limited amount of water and dye is dissolved in it. Earlier starch was preferred as a thickening agent for printing. Nowadays gums or alginates derived from seaweed are preferred as they allow better penetration of color and are easier to wash out. Most pigment printing is done without thickeners because the mixing up of resins, solvents and water produces thickening anyway.

Synthetic Dyes

Synthetic dyes are classified based upon their chemical composition and the method of their application in the dyeing process.

Basic (Cationic) Dyes

Basic (Cationic) Dyes are water-soluble and are mainly used to dye acrylic fibers. They are mostly used with a mordant. A mordant is a chemical agent which is used to set dyes on fabrics by forming an insoluble compound with the dye. With mordant, basic dyes are used for cotton, linen, acetate, nylon, polyesters, acrylics and mod acrylics. Other than acrylic, basic dyes are not very suitable for any other fiber as they are not fast to light, washing or perspiration. Thus, they are generally used for giving an after treatment to the fabrics that have already been dyed with acid dyes.

Direct (substantive) Dyes

Direct (substantive) Dyes color cellulose fibers directly without the use of mordents. They are used for dyeing wool, silk, nylon, cotton, rayon etc. These dyes are not very bright and have poor fastness to washing although they are fairly fast to light.

Mordant Dyes

The mordant or chrome dyes are acidic in character. Sodium or potassium bichromate is used with them in the dyebath or after the process of dyeing is completed. This is done for getting the binding action of the chrome. They are mostly used for wool which gets a good color fastness after treatment with mordant dyes. They are also used for cotton, linen, silk, rayon and nylon but are less effective for them.

Vat Dyes

Vat dyes are insoluble in water and cannot dye fibers directly. However, they can be made soluble by reduction in alkaline solution which allows them to affix to the textile fibers. Subsequent oxidation or exposure to air restore the dye to its insoluble form. Indigo is the original vat dye. These dyes are the fastest dyes for cotton, linen and rayon. They are used with mordents to dye other fabrics such as wool, nylon, polyesters, acrylics and mod acrylics.

Reactive Dyes

Reactive dyes react with fiber molecules to form a chemical compound. These dyes, they are either applied from alkaline solution or from neutral solutions which are then alkalized in a separate process. Sometimes heat treatment is also used for developing different shades. After dyeing, the fabric is washed well with soap so as to remove any unfixed dye. Reactive dyes were originally used for cellulose fibers only but now their various types are used for wool, silk, nylon, acrylics and their blends as well.

Disperse Dyes

Disperse dyes are water insoluble. These dyes are finely ground and are available as a paste or a powder that gets dispersed in water. These particles dissolve in the fibers and impart color to them. These dyes were originally developed for the dyeing of cellulose acetate but now they are used to dye nylon, cellulose triacetate, and acrylic fibers too.

Sulfur Dyes

Sulfur Dyes are insoluble and made soluble by the help of caustic soda and sodium sulfide. Dyeing is done at high temperature with large quantities of salt so that the color penetrates into the fiber. After dyeing the fabric is oxidized for getting desired shades by exposure to air or by using chemicals. Excess dyes and chemicals are removed by thorough washing. These dyes are fast to light, washing and perspiration and are mostly used for cotton and linen.

Pigment Dyes

Although pigments are not dyes in a true sense, they are extensively used for coloring fabrics like cotton, wool and other manmade fibers due to their excellent light fastness. They do not have any affinity to the fibers and are affixed to the fabric with the help of resins. After dyeing, the fabrics are subjected to high temperatures.

Dyeing Methods

Color is applied to fabric by different methods and at different stages of the textile manufacturing process.

Stock dyeing: The fiber is dyed even before it is spun.

Top dyeing: Top is the combed wool. In this method, the fiber is dyed in the stage just before the appearance of finished yarn.

Piece dyeing: In this method, small batches of constructed natural colored fabric are dyed according to the demands for a given color.

Solution pigmenting or dope dyeing: Dye is added to the solution before it is extruded through the spinnerets for making synthetic filaments.

Garment dyeing: Garment dyeing Dye is applied to finished products such as apparels and garments.

Stock dyeing: Stock dyeing is used to dye fibers. In this process, the staple fibers are packed into a vessel and then dye liquid is forced through them. Although the dye solution is pumped in large quantities, the dye may not penetrate completely into the fibers and some areas may be left without dyeing. However, the following blending and spinning processes mix up the fibers in such a thorough way that it results in an overall even color. Woolens are usually stock dyed.

Top dyeing: Top is the combed wool sliver. It is wound on perforated spools and the dye solution is circulated through it. This method results in very even dyeing.

Yarn dyeing: In this process, the staple fibers are packed into a vessel and then dye liquid is forced through them. Although the dye solution is pumped in large quantities, the dye may not penetrate completely into the fibers and some areas may be left without dyeing. However, the following blending and spinning processes mix up the fibers in such a thorough way that it results in an overall even color. Woolens are usually stock dyed.

When dyeing is done after the fiber has been spun into yarn, it is called yarn dyeing. In this method, the dyestuff penetrates the fibers to the core of the yarn. There are many forms of yarn dyeing- Skein (Hank) Dyeing, Package Dyeing, Warp-beam Dyeing, and Space Dyeing.

Skein (Hank) Dyeing: The yarns are loosely arranged in skeins or coils. These are then hung over a rung and immersed in a dyebath in a large container. In this method, the colour penetration is the best and the yarns retain a softer, loftier feel. It is mostly used for bulky acrylic and wool yarns.

Package Dyeing: The yarns are wound on spools, cones or similar units and these packages of yarn are stacked on perforated rods in a rack and then immersed in a tank. In the tank, the dye is forced outward from the rods under pressure through the spools and then back to the packages towards the center to penetrate the entire yarn as thoroughly as possible. Mostly, the carded and combed cotton which are used for knitted outerwear is dyed through this method.

Warp-beam Dyeing: It is similar to package dyeing but more economical. Here, the yarn is wound on to a perforated warp beam and then immersed in a tank for dyeing it applying pressure.

Space Dyeing: In this method, the yarn is dyed at intervals along its length. For these two procedures- knit- deknit method and OPI Space-Dye Applicator- are adopted. In the first method, the yarn is knitted on either a circular or flat-bed knitting machine and the knitted cloth is then dyed and subsequently it is deknitted. Since the dye does not readily penetrate the areas of the yarn where it crosses itself, alternated dyed and undyed spaces appear. The OPI Space-Dye Applicator technique produces multi coloured space- dyed yarns. The yarns are dyed intermittently as they run at very high speeds through spaced dyebaths. They are continuously subjected to shock waves produced by compressed air having supersonic velocities.

Piece Dyeing: The constructed fabrics are piece dyed for the flexibility they provide. The textile manufacturer can dye the whole fabric in batches according to the fashion demands of the time thus avoiding wastage and resultantly loss. There are several methods prevalent or piece dyeing.

Beck dyeing: It is used for dyeing long yards of fabric. The fabric is passed in rope form through the dyebath. This rope of the fabric moves over a rail onto a reel which immerses it into the dye and then draws the fabric up and forward and brings it to the front of the machine. This process is repeated many times until the desired color intensity is obtained.

Jig dyeing: It is similar to the process of beck dyeing with a slight variation. The fabric in jig dyeing is held on rollers at full width rather than in rope form as it is passed through the dyebath.

Pad dyeing: Padding is also done while holding the fabric at full width. The fabric is passed through a trough having dye in it. Then it is passed between two heavy rollers which force the dye into the cloth and squeeze out the excess dye. Then it is passed through a heat chamber for letting the dye to set. After that it is passed through washer, rinser and dryer for completing the process.

Jet dyeing: Fabric is placed in a heated tube where jets of dye solution are forced through it at high pressures. The fabric too moves along the tube. The solution moves faster than the cloth while coloring it thoroughly.

Solution pigmenting or dope dyeing: This is a method applied for dyeing the synthetic fibers. Dye is added to the solution before it is extruded through the spinnerets for making synthetic filaments. This gives a colorfast fiber as the pigments are used which are the fastest known colors.

Garment dyeing: When the finished textile product such as hosiery or sweaters are dyed, it is called garment dyeing. A number of garments are packed loosely in a nylon net and put into a dyestuff filled tub with a motor driven paddle. The dye is thrown upon the garments by the moving paddles' effect.



Garments Wash

The garment wash is a new technology in the garment trade. Normally washing means cleaning something. But in the garment trade, only cleaning of garments is not the garment wash. Garment washing is a technology which is applied to change or modify the outlook, appearance, comfortability, and design of garments. Garment washing is applied on solid dyed garments or solid printed fabric. Now I would like to discuss the different types and objects of wash in the garment industry.

Types of Garments Washing:

In garments industry, there are mainly two types of washing process for garments products. Those processes are wet washing process and dry washing process. Here also wet washing process is divided by eight ways and the dry washing process is divided by five ways, according to the fabric quality and buyer requirements. But most common and applied wash in garment is normal wash, which is also known as detergent wash. In the wet washing process enzyme wash, stone wash and bleach wash is most popular to the buyer and the manufacturer. On the other hand, Potassium per magnet spray and hand scraping is common for dry washing process in the garments industry.

Garments Wash

A. Wet Washing Process

1. Normal wash or Detergent wash

2. Pigment wash

3. Enzyme wash

4. Stone wash

5. Bleach wash

6. Enzyme-stone wash

7. Bleach-stone wash

8. Acid wash

Stone Wash

B. Dry Wash Process

1. Sand blasting
2. Whisking or wrinkling
3. Hand scrapping
4. Potassium per magnet spray (PP spraying)
5. Destroying

Potassium per magnet spray (PP Spray)

Objects of Garments Wash:

To remove dirt, dust and waste materials from garments.

To remove size materials from garments.

For garments wash shrinkage occurs, so accurate measurement can be found by customers.

Fading effect is varied here by variation of an amount of detergent used, processing time and processing temperature.

To increase the brightness of garments.

To increase the smoothness of garments.

To change the appearance of garments.

To make directly wearable after purchase.

To make garments become soft and handy.

To remove harmful materials from garments.





Organogram

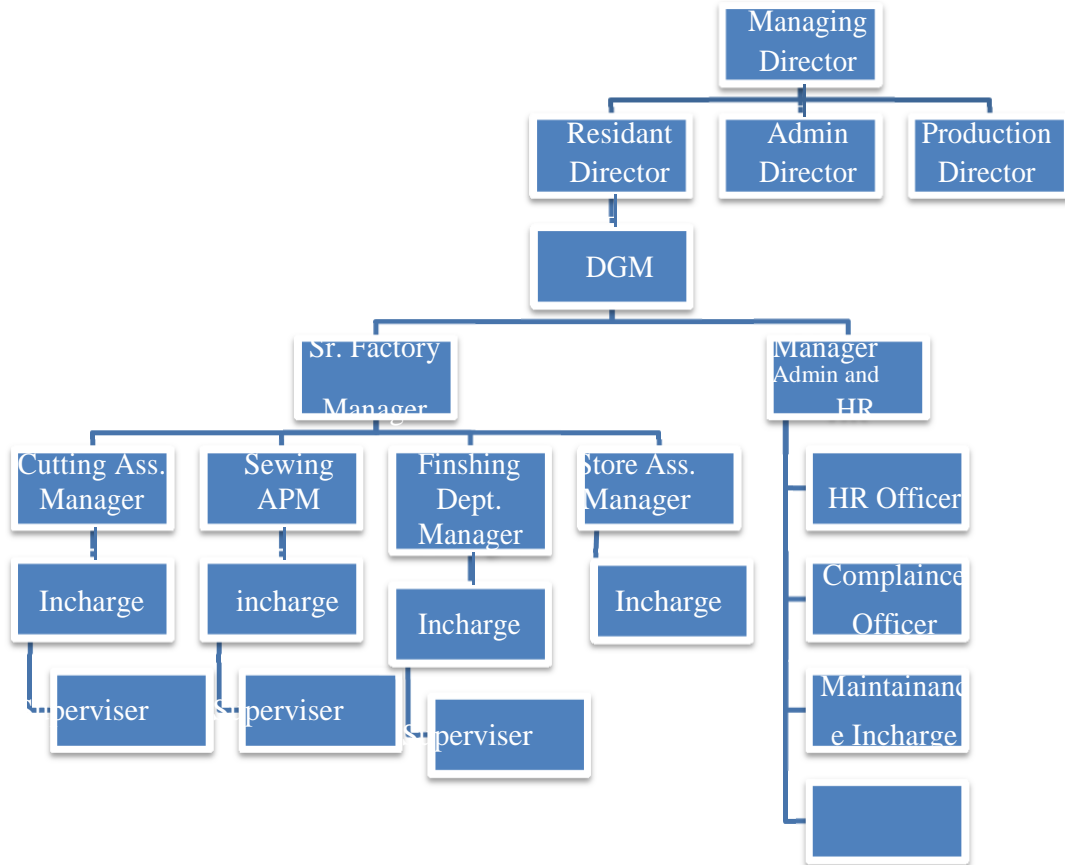


Figure: Organogram of garments section

Machine Description

1. Plain Machine – JUKI, Golden Wheel
2. Over Lock Machine - JUKI, Golden Wheel
3. Flat Lock Machine – JUKI, Shing Ling, Yamaha
4. Bar tuck Machine
5. Button attaching Machine
6. Button Hole Machine

CAD and Sample Section

Functions of CAD room:

- Producing pattern
- Marker making
- Calculate marker consumption

Marker machine specification

Brand name: Lyctra

Origin: Japan

(Marker length in inch + AL) x (Marker width in inch + AL) *GSM

Marker consumption= ----- * 12

1550 x 1000 x number of pattern pieces ➤ Maximum marker width 72"

- Marker efficiency should be minimum 85%.
- Marker efficiency depend on wastage during cutting

Software

For marker making Lyctra CAD software is used

Key factors during marker making

- Fabric width must be higher than marker width
- Fabric length must be higher than marker length
- Allowance must give in end and selvedge minimum 1”
- Grain line must be parallel to the line Wales in knitted fabric.

Function of sample section

- Working pattern making

Pattern which is used to make sample garment. Working pattern used as a base for manipulation when generating design pattern.

- Size set sample making

Machine in sample room

- Plain machine
- Overlock machine
- Flatlock machine
- Button hole machine

Store Section Function

- Store the materials for order
- Issue and supply the materials to production unit
- Prepare Inventory report
- After receiving fabric for each order then numbering different shade of color of the fabric role.
- Locally and Imported fabric is stored.
- Mostly imported fabric comes from India.
- Different types of fabric like 100% cotton single jersey, Terry, Fleece & spandex etc.

Different Types of Accessories

➤ Main label	➤ Elastic
➤ Care label	➤ Zipper
➤ Size label	➤ Hit seal label
➤ Threads	➤ Carton
➤ Twill tape	➤ Poly
➤ Hanger sizer	➤ Rope
➤ Hanger loop	➤ Button
➤ Price sticker	➤ Garment Marking Chalk
➤ Tissue paper	➤ Lock pin
➤ Snap button	➤ Poly sticker
➤ Hang tag	➤ Gum tape
➤ Hanger	➤ Eyelet

Table: Different Types of Accessories

Fabric Relaxation Procedure

- 100% cotton single jersey and terry Minimum 12 hours
- Single jersey cotton 5% Spandex &rib Minimum 24 hours
- Fleece 100% cotton Minimum 16 hours
- Fleece Polyester/ cotton Minimum 12 hours

Lab Section

Equipment's List

- Electric balance
- GSM cutter
- Washing machine
- Snap pull test machine
- Light box

Shrinkage Checking Procedure

- 10% roll of fabric from a lot for shrinkage test.
- Take 25''*25'' fabric for washing according to Buyer instruction.
- Then wash the fabric for 3 times
- Each time 10 minute wash + 5 Minute dryer
- After that find out the measurement of fabric by using formula

(Before wash – After wash) * 100

Formula= -----

Before wash

Light Box Checking Instruction

Light box is used for checking fabric shade

- F - Florescent
- D65 - Day Light
- TL 84 - Tube Light
- UV - Ultra Violet
- CWF - Color White Fluorescent used for checking white and blue shade

CUTTING SECTION

Spreading

Fabric spreading is the part of apparel manufacturing process. Fabric spreading is done after marker making. Spreading of fabric can be defined as the smooth laying out of the fabric of specific length and width. The marker is laid on the top most layer of the fabric. Cutting operation is done after completing fabric spreading. Cutting performance depends on fabric spreading. Spreading is done manually

Requirements of Fabric Spreading

- Alignment of fabric ply,
- Correct ply tension,
- Fabric must be flat,
- Elimination of fabric defects,
- Correct ply direction and lay stability,
- Easy separation of the cut lay into bundles,
- Avoidance of distortion in spreading,
- Matching the shade of fabric

Cutting Section



Process of Cutting

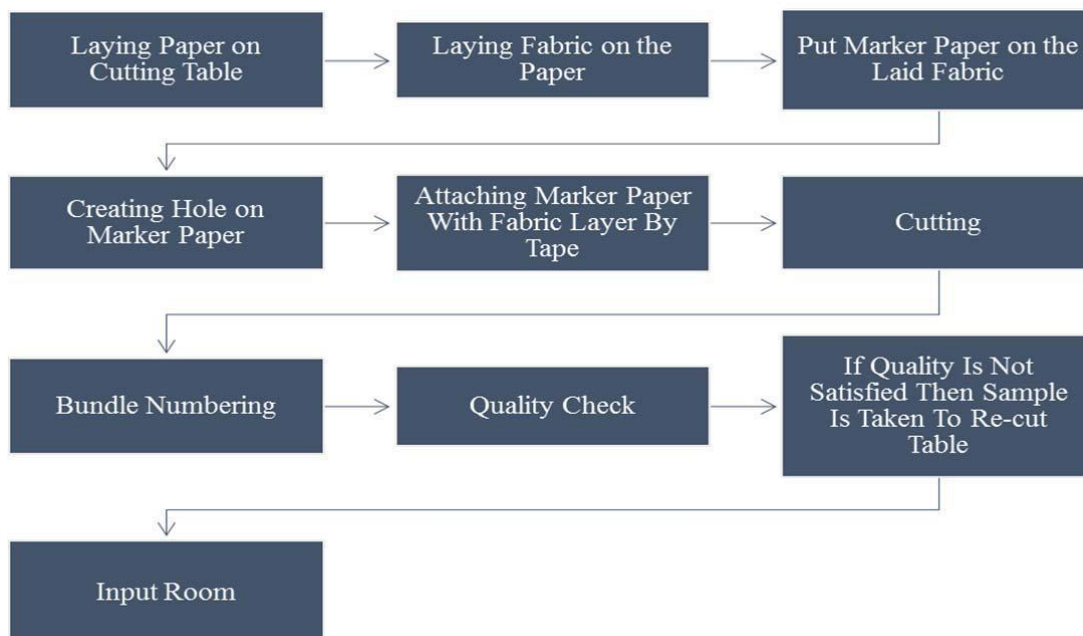


Figure: Process of cutting

Machine in Cutting Section

1. Machine Name: Lyctra auto cutter

Brand Name: Oshima

Origin: Japan

2. Machine Name: Straight Knife

Brand Name: KM

Origin: Japan

Parts of Cutting Machine with Their Functions

- Plate: To stand the machine and help to move the machine.
- Feed: To hold the layer of fabric by pressure.
- Knife: To cut the layer of fabric precisely.
- Handle: To help to move the whole cutting machine according to design.
- Power switch: It is used to run and stop the machine.
- Oil box: To supply oil or lubricant to the machine parts.
- Motor: To give reciprocating motion to the knife for cutting.
- Sharpening device: To make sharp the knife edge when required.

Points Should Concern Fabric Cutting

- During Cutting operator must be used metal gloves.
- Precision in cut i.e. the dimension of pattern and fabric parts is cut should be same.
- The cut edge must be cleaned.
- Infused edge.
- Consistency in fabric cutting.
- Support of lay.
- Drill hole and size should be appropriate and it will be placed in its right place. If it is too large it would be seen after sewing. But if it is too small then it can be blocked easily.
- Should position the pattern pieces on the fold or on the grain line as indicated.
- Without shoe operator should not use cutting machine.
- Mask must be used during cutting.

Lay Height

- Single jersey/ spandex/ interlock: Maximum 2-2.5"
- Single jersey/Cotton & Others: Maximum 3-4"
- Fleece Maximum 4-4.5"
- Mesh/Dazzle: 2"

Cutting Table Specification

- Total Cutting Table: 3 pcs
- Table Height: 33"
- Table Width: 97.5"
- Table Length: 840"

Wastage during Cutting

- Ends of ply losses.
- Selvedge loss.
- Loss of fabric in roll.
- Loss for fabric defect.

Sewing Section

Process Flow

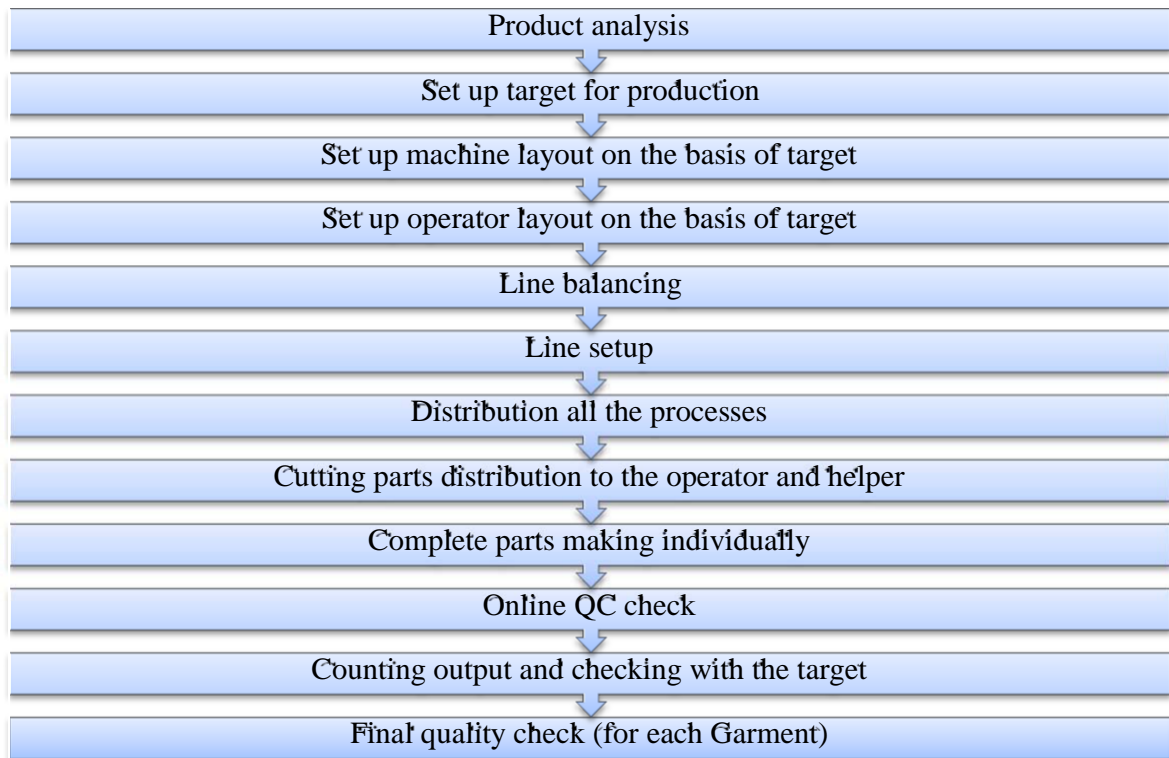


Figure: sewing process

Different Type's Machineries with Functions in Sewing Section

<p>Plain machine</p> <p>Application:</p> <ul style="list-style-type: none"> ➤ Bottom hemming ➤ Belt making ➤ Loop tack stitch ➤ Pocket joint stitch ➤ Zipper joint ➤ Neck top stitch etc. 	<p>Over lock machine</p> <p>Application:</p> <ul style="list-style-type: none"> ➤ Neck piping ➤ Sleeve piping ➤ Sleeve joint ➤ Side seam etc.
<p>Flat bed machine</p> <p>Application:</p> <ul style="list-style-type: none"> • Belt top seam • Back tape joint 	<p>Flat lock cylinder bedmachine</p> <p>Application:</p> <ul style="list-style-type: none"> • Sleeve hem • Leg hem
<p>Button Hole machine</p> <p>Application:</p> <p>To create a hole for button</p>	<p>Heat Sealmachine</p> <p>Application:</p> <p>Attached main label with garments</p>
<p>Bar tack machine</p> <p>Application:</p> <p>Bar tack stitch</p>	<p>Flat lock raw edge cutter machine</p> <p>Application:</p> <p>For body hem.</p>

Table: Sewing Machine

Sewing Machine needle information

Machine Name	Needle Name	Size
Plain	Db	7-12
Over Lock	Dc	7-12
Flat Lock/Feed of the Arm	Uy	7-12
Button Hole/ Bartech	dp-5	11-14
Button Attaching	Dp-17	11-14

Table: Sewing Machine needle information

Quality control in sewing section

Sewing defects

- Needle damage
- Skipped stitch
- Seam pucker
- Wrong stitch density
- Uneven stitch
- Defected stitch
- Oil spot

Seaming defects

- Uneven width
- Uneven seam line
- Not secured by back stitch
- No matching of check or stripe
- No matching of seam
- 4 point check

Finishing Work in Process

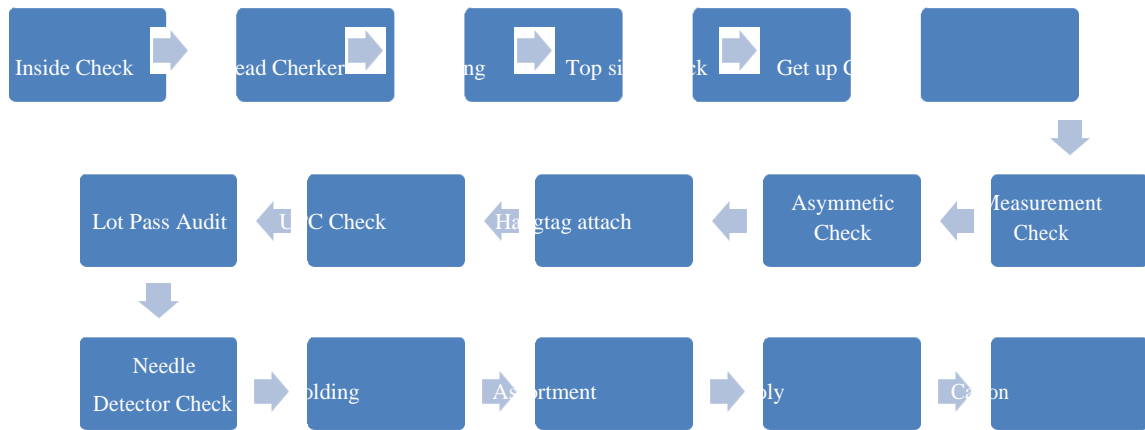


Figure: Finishing Work in Process

Process and Their Function

Process	Function
Inside Check	Check defect in inner part of garments. Like missed stitch, uneven seam.
Thread checker	Remove loose thread from garments part.
Ironing	Create a shape of garments.
Top side Check	Check defect in top part of garments Like, Uncut thread, Skipped stitch, Open seam
Get-up check	<ul style="list-style-type: none"> ➤ Check Cutting small thread ➤ Check Whether color shade is right or not ➤ Check Spot in garments
Measurement check	Check measurement according to buyer requirement
Asymmetric check	Check uneven parts of garments.
Hang tag attach	Hang tags are attached with a garment, such as, a) Price tag b) Tag of garment type These hang tags are attached with garment either by hand or by hang tag machine.
UPC check	Checking barcode and style number of garments

Lot pass audit	In here takes number sample from a lot then check all faults. If faults are found greater than the acceptable range then the lot is rework.
Needle detector check	It identifies needles in garments if have.
Folding	Pressed garments are folded in a specific dimension. This work is usually done by women labors.
Assortment	In this section garments are assorted in different size and color in a ratio.
Poly	In this section garments are packed in poly.
Carton	Poly is filled in carton.

Table: Finishing Process and Their Function

Final Inspection

Garments are inspected by AQL. In this system samples are collected inspected by statistically from the lot size and will decide the lot of garments to be granted or rejected. AQL is mainly used in final inspection after garment making.

Merchandising Department

Merchandising is the department which mediates marketing and production departments. Sometimes, merchandising department will also have to do costing and pricing.

Work Done by Merchandiser

- Buyer searching
- Costing and consumption
- Order receive
- Sample approval
- Prepare TNA

- Fabric and accessories booking
- Follow up lead time
- Production follow up
- Delivered good at right time and right quantity

Thread Requirement Chart

Machine name	Classification	Required thread per inch
Plain machine	1	2.5"
Plain machine	2	5"
Over lock	3	13.25"
Over lock	4 Thread	15.75"
Over lock	5 Thread	18.75"
Flat lock	3 Thread	16.75"
Flat lock	5 Thread	22.25"
Bar tack stitching		7"per operation
Button hole stitching		7"per hole
Button attaching 2 hole		3" per button
Feed of the arm		7"for 1 needle
Kanchi stitching		7" for 1 needle
Back tape stitching		7" for 1 needle

Table: Thread Requirement Chart

Production Planning and Control (PPC) Department

Production planning and Control department is one of the important department for the apparel manufacturing company.

Working area:

- Job Scheduling

Preparation of time and action calendar for each order from order receiving to shipment.

- Material Resource Planning

Preparation of Material requirement sheet according to sample product

- Loading production

Planner defines which style to be loaded to the production line and how much quantity to be loaded.

- Process selection & planning

According to the order requirement PPC department select processes for the orders. Sometime extra processes are eliminated to reduce cost of production.

- Capacity planning

PPC department plays a major role during order booking. They decide how much order they should accept according to their production capacity.

- Line planning

Line planning with daily production target for the production line.

- Follow up

PPC department keeps close look whether everything is progressing according the plan. They update order wise completed tasks on the Time & action Calendar. .

Maintenance Section

Maintenance is a process by which equipment is looked after in such a way that trouble free.

- All machines are checking in every month.
- Oil change depends on machine use.
- Mostly cutting machine oil change in every 7 days.
- If any problem occurs exchange machine or solve machine problem as early as possible.

PRINTING SECTION



Organogram

General
Manager

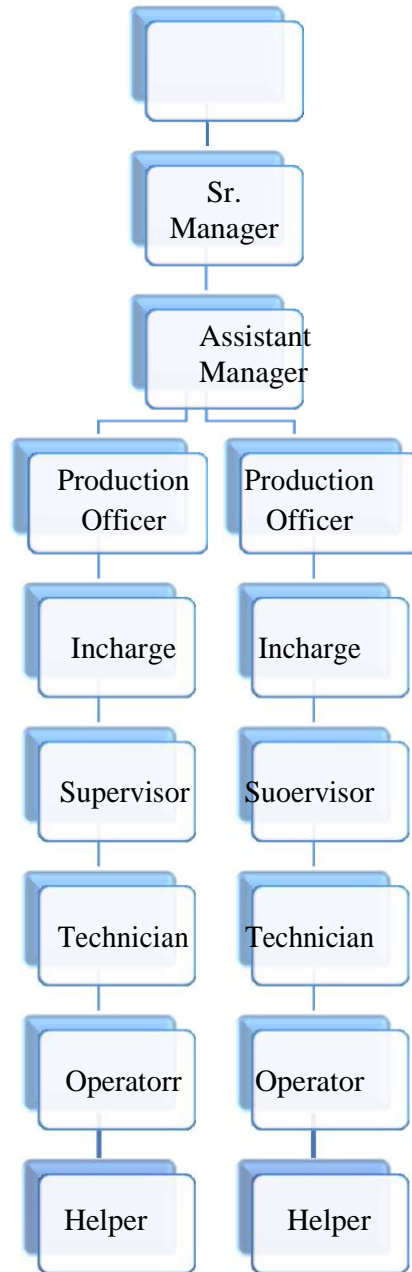


Figure: Organogram of printing section

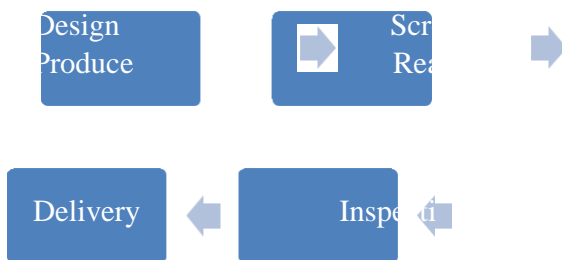
Printing Type

AOP- All over printing/ fabric print

Print Types

- Pigment (for all fiber)
- Reactive (only for cotton)
- Discharge
- Metallic/Glitter
- Burn Out

Printing Process



Machine

- Flat Bed Screen Printing

Machine Brand name: Kuel

Origin: South Korea

- Rotary Screen Printing

Machine: Brand name: Buser

Origin: Switzerland

Flat Bed Screen Printing Machine

The fabric is first glued to a moving endless belt. A stationary screen at the front of the machine is lowered onto the area that has to be printed and the printing paste is wiped with a squeegee. Afterwards the belt, with the fabric glued on it, is advanced to the pattern-repeat point and the screen is lowered again. The printed fabric moves forward step by step and passes through a dryer. The machine prints only one color at a time. When the first color is printed on the whole length of the fabric, the dried fabric is ready for the second cycle and so on until the pattern is completed. In this industry maximum 12 colors can be used as per machine capacity in flat bed screen machine. Screen made of mixing of polyester and polyamide.

Rotary Screen Printing Machine

The color is transferred to the fabric through lightweight metal foil screens, which are made in the form of cylinder rollers. The fabric moves along in continuous mode under a set of cylinder screens while at each position the print paste is automatically fed to the inside of the screen from a tank and is then pressed through onto the fabric. A separate cylinder roller is required for each color in the design.

Screen made of nickel.

Repeat Size in Rotary Screen Machine

- 640 mm
- 820 mm
- 914 mm

Mesh Size (In Linear Inch)

- 12
- 16
- 35
- 40
- 60
- 80
- 100
- 125
- 135
- 155
- 195

Chemical Used in Printing

Name	Function
Binder	To fix color
Thickener	Maintain viscosity
Softener	Soft
Urea	To reduce friction
Liquor Ammonia	P ^H control
Fixing agent	Fixation
Resist salt	Prevent color bleeding

Table: Chemical used in printing

Finishing

Machine Name: Stenter

Brand Name: LK

Origin: China

Function

- Dye is fixed by subjecting the print to hot air by using heat of steam.
- Mainly used after reactive color print of cotton fabric.

Garment washing

Garment washing is a significant part of garment industries and it is mainly applied on denim garments and any other casual garments. In the primary stage garment does not inherit customer's desired properties but after washing it become most widely used due to its new appearance, softness, comfort, strength and low cost, which create customer's absolute satisfaction. Garment washing process is provided with a lucrative and glassy outlook by chemical or wet washing process and mechanical or dry washing process. The most widely used dry washing processes for garment are scraping, spraying, whiskering, damages, spots, rubbing and tacking contrariwise wet washing processes for garment to develop new a look and effect are normal wash or rinse wash, pigment wash, caustic wash, silicon wash, enzyme wash, stone wash, stone enzyme wash, bleach wash and acid wash. This study gives an indication different types washing process and the change of physical and chemical properties due to application of wet and dry washing processes as an imparting desired effect on garments.

Washing is the technology which is used to modify the appearance, size, outlook, comfort ability and fashion of the garments is called garment washing. It is mainly applied on denim goods and any other garments. In washing process, a garment is provided with a lucrative economical and glassy appearance. Washing operations carried out most frequently during a complete textile finishing cycle. They are almost always connected to key treatments and aimed at removing from the fabric insoluble matters, matters already in solution or an emulsion of other impurities. To execute the buyer requirement washing is very important process of garment products. For this reason, large number of washing factory is establishing in Bangladesh.

Garment is uncomfortable to wear, without washing due to its weaving, dyeing and printing effects. It essentially needs a finishing treatment to make it softer, suppler and smooth which enhance wearer's comfort that's way washing is one of the most widely used finishing treatments due to its effects on appearance and comfort.

The wet washing process of garments to create a better look or effects by normal wash or rinse wash, pigment wash, caustic wash, silicon wash, enzyme wash, stone wash, stone enzyme wash, bleach wash and acid wash. In dry washing process, the most important finishing treatment for garments, is done to impart scraping, spraying, whiskering, damages, spots, rubbing and tacking on garments or denim products. Washing process applied a combination of wet or dry process on raw sample to develop certain effect in the garments and measured the change of mechanical or physical properties due to application of different wet or dry washing process. The study is related to the combination of wet or dry washing process on garments or other casual garments. Wet washing process is the most important finishing for garment to improve the outlook which influences the chemical properties of garments on the other hand, dry washing process is the most important finishing for garment which influences the mechanical properties of garments. A number of combinations of dry washing process are carried out on denim to get desired effect. Wet and dry washing process is most widely used to get the chemical and mechanical properties on garments by replacing the conventional process.

Machine used in washing plant

1. Sample washing machine (Horizontal or vertical)
2. Grinding machine
3. Washing machine (Side loading)
4. Tagging machine
5. Washing machine (Front loading)
6. Steam chamber for crinkle
7. Hydro extractor machine
8. Dryer machine (Steam or gas)
9. Chemical mixture machine
10. Spray gun and dummy
11. Industrial oven (Gas or electric)
12. Screw compressor
13. Boiler
14. Laser draw
15. Submersible pump
16. Generator

Types of chemical used in washing plant

1. Enzyme
2. Micro emulsion silicon
3. Detergent
4. Salt (sodium chloride)
5. Acetic acid
6. Antistain
7. Buffer
8. Hydrogen peroxide
9. Bleaching powder
10. Stabilizer
11. Sodium hyposulfite
12. Fixing agent
13. Caustic soda
14. Catanizer
15. Soda ash
16. Optical brightener
17. Sodium bicarbonate
18. Resin
19. Potassium permanganate
20. Sodium metabisulphite
21. Cationic / Nonionic flax softener
22. Desizing agent.

The function of chemicals used in washing plant

Enzyme: The action of enzyme during enzyme wash is hydrolysis of cellulose. At first it attacks the projecting fibers and hydrolyzes them. Then it attacks the yarn portion inside fabric and partly hydrolyzes the yarn portion. As a result, color comes out from the yarn portion and faded effect is produced.

Detergent: Chemical character is fatty alcohol polyglycol ether in an aqueous, glycolic solution. Detergent is widely applicable in the continuous and discontinuous pretreatment of all types of fiber and their blends. To remove impurities, mineral oil contamination and sizes from the garments.

Acetic acid (CH₃COOH): Acetic Acid is used to neutralize the garments from alkaline condition and to control

the pH value in wash bath.

Antistain: Antistain is used to prevent the staining on weft yarn of the denim (white yarn), white pockets of garment, levels, and contacted fabrics of garment and increased the brightness of fabrics; it is also acts as anti-creasing agent.

Bleaching powder: Bleaching powder is an oxidizing agent. It is used in washing plant for color out from the denim garments. We can achieve different shade of color on garment (Dark, medium, light shade).

Sodium hyposulphite: Sodium hyposulphite is used to neutralize the garments from chlorine bleach.

Caustic soda: Caustic created the role in bleach technique without color change the garment and has a good cleaning power. It is work as fading effect or old looking effect come rapidly on garments.

Soda ash: Soda ash creates alkaline medium for the breakdown of pigment dye. Soda ash help to uniform bleaching action on bleach bath. It has a cleaning power and help color fading effect of garment. It is used also for color fixing in dye bath.

Sodium bicarbonate: Sodium bicarbonate is used in washing plant in the bleach bath with bleaching powder for denim light shade because easily color out with in short time. As a result, production increase and costing is low.

Potassium permanganate (PP): Potassium permanganate is used in acid wash with pumice stone for color out from the garments. It is used also spray chamber by nozzle for color out (whitish effect) from the garments.

Flax softener (Cationic, Nonionic): Softener is used to make the garments treated textiles as surface feel that is both slickly and soft and also provides excellent lubricating properties. Flax softener (cationic or nonionic) diluted with hot water then use in the machine.

Micro emulsion silicon: Amino Silicon is a textile finishing agent consisting mainly of amino modified silicon. When applied on fabrics, it gives durable softness, lubricity, elastic handle, anti-pilling, dimensional stability, tear resistance and fabric to be cut and sewn more easily allows and improving wear and easy care properties.

Sodium chloride (salt): It helps to exhaust dye in to the fiber.

Buffer: Buffer is used in washing plant for pH control of enzyme bath, softener bath, desizing bath.

Hydrogen peroxide: Hydrogen peroxide creates the prime role in bleach wash technique. In alkaline medium, hydrogen peroxide breaks up and gives some perhydroxyl ion, which discolor the coloring materials and as a result fading effect is developed. Hydrogen peroxide is used in scouring, bleaching bath for white or ready for dyeing of gray fabric garments. It is used also neutralized the garment from alkaline condition.

Stabilizer: Hydrogen peroxide is work a good condition at temperature above 90°C, when temperature raise to 90°C then break the hydrogen peroxide. Stabilizer is used to protect break the hydrogen peroxide and peroxide works in bath smoothly.

Fixing agent: Fixing agent is used for unfixed dye to fix on fabrics, when fabric color will be proper fixing then color fastness and rubbing fastness will be increased.

Catanizer: Catanizer is used in pigment exhaust method processing. Pigment is color not dye stuff. Pigment colors have no affinity to fabric when catanizer is used in fabric then increase the affinity between pigment color and fabrics.

Optical brightness: Two types of optical brightener are used in the washing plant, red brightener and blue brightener. Mainly optical brightener is used for improve the brightness of garments.

Resin: Resin is high efficiency textile resin based on etherified dimethylol glyoxalin monoureine urea. Resin is used for the creation of semi-permanent creases in denim and other cellulose fabrics. It is used also cotton and polyester fabric. Fabric retains soft handle after washing.

Sodium metabisulphite: Sodium metabisulphite is used in the washing plant to neutralize the garment from potassium permanganate.

Desizing agent: Desizing agent is used to remove mainly starches, cmc, waxes, fatspectin's, minerals and unfixed indigo dye from denim, twills, poplin and canvas fabrics.

Objects of washing:

To remove sizing materials and to soften the garment.

To remove dirt, dust and waste materials from garments. To remove harmful materials from garments.

To increase brightness of garments.

To modify the appearance to make fashion. To create different effects and finishes.

To create vintage look and used effect.

To make directly wearable after purchase.

For garments wash shrinkage occurs, so accurate measurement can be found by customers.

Fading effect is varied here by variation of amount of detergent used, processing time and processing temperature.

Types of washing:

Mainly there are two types of washing, such as:

- I. Dry or mechanical process
- II. Wet or chemical process

Dry process or Mechanical washing process:

In garments washing, there are some processes which have done without using any chemical or without using any garments loading washing machine are called dry process or mechanical process. Sometimes dry process can be done by using mechanical method.

Types of dry washing processes applied in garments:

Scraping
Spraying
Whiskering
Damages
Spots
Rubbing
Tacking

Scraping

Scraping is a process to remove color from the surface of denim fabric to create worn out effect on the garments.

This effect is done by different methods but it is very difficult to get even look as per buyer requirements, so experienced operator should do this process. Figure indicates scraping washing effects.



Objects

This process is done before wet washing of the garment. It is done on garments to get distress look.

Fabric is scrapped with different tools in order to get a used effect.

All scraping processes are done manually, so it is difficult to achieve consistent finishes every time.

Types

- I. Sand blasting: In sand blasting process aluminum oxide are suitable for denim which is use as abrasive tools. Compressed air guns shoot sand forcibly onto desired area of denim fabric to create abrasion.
- II. Hand sand: Abrasion of the fabric surface is done with sand paper. This process is done by hand. It can work at very high pressure, which is a major requirement for high production.
- III. Hand sand all over: The most important factor is to select right number of paper according to the fabric strength and intensity need. Scraping is done all over the garment by sandpaper.
- IV. Laser scraping: Laser machine is used to get the effect. This process is very expensive.
- V. Central crease mark: Jeans is folded and then scraping is done by ironing with temperature and pressure or by sand paper.
- VI. Fabric is crimped then ironed with high temperature and pressure to create crease marks.
- VII. Pocket mark: scraping is done to make the inside pocket visible
- VIII. Side seam hand sand: Hand sand is applied on the side seam of the garment.

Spraying

In this process chemical is sprayed onto jeans by a spray gun. The main purpose of this process is discoloration as shown in Figure.



Objects

Spraying is done on jeans to take a bright effect.

Vintage and muddy appearance on denim fabric surface. To fix the color and permanent effect on the jeans.

Types:

- I. Spray PP (Potassium permanganate): PP Spray is being done to achieve local abraded area to appear whiter than background indigo color shade on the fabric. PP sprayed onto desired surface of jeans and PP oxidizes indigo color. This can be done before or after wet washing. There are two steps involved in this process.

Step 1: PP is sprayed onto jeans and dried then pink color appears.

Step 2: Neutralization is done after spraying to get final effect. Normally sodium metabisulphate is used as neutralizer.

- II. Bleach Spray: Bleach solution is sprayed or rubbed onto desired areas of jeans. Neutralization is done immediately after spraying. It provides more yellowish tone than PP spray.
- III. Pigment color spray: Pigment color is sprayed on the upper parts to get a vintage and muddy look. Jeans must be cured in order to fix the pigment and to have permanent effect on jeans.
- IV. Resin color spray: A mixed solution of resin and pigment color is sprayed onto the garment. It provides unique color and touch that dyeing cannot give.
- V. Resin dip: Full garment is dipped into a resin solution to produce coating effect on garment.
- VI. Resin color dip: Full garment is dipped into a resin solution mixed with pigment color. The aim of resin color dip is to produce coating effect and unique color on garment.

Whiskers

These worn out lines or effects generated by different methods are done mainly on hip and thigh areas of jeans. Mustaches or whiskers are one of the most important design on garment surface. This is also known as cat's whiskers or moustaches which effects is given in Figure.



Objects

This process is famous for its high quality. It is also cost-effective.

it is most frequently used in small industries especially where the production is not consistent to style.

To get a permanent effect high temperature is required.

Types:

- I. Whiskers: This is called normal whiskers. Effect is achieved with sand paper or pasted on plastic material. Before starting execution placements and pattern must be marked on garments. Stencils can also be used for design.
- II. PP spray whiskers or pigment spray whiskers: Effect is achieved by spraying potassium permanganate or pigment color. Usually done on top of sand paper whiskers (normal whiskers) to highlight them. Shape or design can be achieved by placing a stencil on jeans.
- III. Whiskers creases: Fabric is folded in many places and then scrapped on the surface.
- IV. 3D Resin whiskers: Resin is added after normal or PP spray whiskers to make the effect permanent.

Process: Resin is sprayed all over or on local area of the garment with a spray gun. Then whiskers are designed by folding the fabric. To get a permanent effect, garment must be put into oven and dry at high temperature for 30 minutes.

Damages/ Destroy

Damage or destruction is an art which make denim look unique and used. In order to achieve favorite vintage look, many damaging processes is necessary. Damages washing effect is shown in Figure.



Objects

The main purpose is get different by distressing.

This mainly done warp wise to make white yarn visible. It is done mainly on pocket edges and hem.

Types:

- I. Grinding: Mainly used on edges of the garment such as pocket edges and pocket hems. This is done by running the edges against abrasion surface or stone to achieve worn out effect. Normally pen type of stone tools are used for small production. For large production, fixed grinding machines are used. In this machine the operator rubs the edges to rotating stone wheel to get the effect.
- II. This is done on desired areas of jeans by pen type of stone tools. If the tool is driven warp wise, weft will be visible. On the other hand, if the tool is driven weft wise, warp will be visible. As there is no color contrast, it will not be as clearly visible as weft.
- III. Hole: A hole is created on the garment with cutter or other tools.
- IV. Scratching: Garment is scratched with sharp tool. Scratching is normally done warp wise or horizontally.
- V. Needle effect or cuts: Effect is created by cutting the warp yarn by knife, so that weft yarn becomes visible. Needle is also used to tear out fiber warp wise.

Spots

Spots is another kind of dry washing which is done by different method. This is also depending on fabric types and buyer requirements. As shown is spot effects on denim fabric.



Objects

Spot is the process by which we will get the spot or design.

The design is made raw denim color so this process is done at unwashed condition.

Types

- I. PP spot and bleach spot: Spots are created with PP (Potassium permanganate) or bleach solution. Process depends on the type of fabric.
- II. Color spot: Spots are created with pigment color. Oven process (curing is needed to fix permanently the pigment on the garment).
- III. Silicon spot: Spots are created with silicon. It creates dirty or wet effect on the garment.

Rubbing

Rubbing is usually done in combination with spraying. This process allows to give more contrast and highlight some part of the garment, especially on waistband or on top of tacking effect as shown in Figure.



Objects

Rubbing is done for more contrast effect on the fabric surface. This process focus tacking effect on the fabric.

Types

- I. Rub pigment: A sponge or piece of fabric is soaked into the solution then rubbed on the garment.
- II. Rub PP (Potassium permanganate): Rubbing PP gives more contrast effect than PP spray. Normally PP is rubbed to highlight tacking effect.
- III. Rub bleach: A sponge is soaked into bleach solution then rubbed on the garment.

Tacking

Tacking is done by swift tag machine. Garment is folded three, four or five times and tacked or locked through folds. Then the garment is washed and dried. Permanent fold appears after removal of tag pin. The inner of the fold is dark due to less exposure of rubbing and chemicals. Faded effect come on the folded parts. Most favorite areas are waistband, bottom hem, back pocket, back yoke and front pocket corners as given in Figure.



Objects

- Tacking is doing on garment for fashion and value added fashion wear.
- Tacking process doing by tagging machines.
- It is doing also by needle, thread and manually.

Wet or chemical washing process:

Wet or chemical washing process is one of most widely used process, which can be done by using different types of chemical and garments loading washing machine are called wet process or chemical process.

Types of wet washing process applied in garments:

1. Normal wash or rinse wash
2. Pigment wash
3. Caustic wash
4. Silicon wash

5. Stone wash
6. Bleach wash
7. Enzyme wash
8. Stone enzyme wash
9. Acid wash

Normal wash or rinse wash

Normal washing is the most common, simplest and popular washing process with lowest washing cost. It is nearly mandatory from every buyer. In normal wash manufacturing process, some unwanted materials like dirt, dust and starch are removed without any shrinkage. By altering temperature, time and detergent quantity washing effect could be varied in garments surface. Normal washing also known as different name such as detergent wash, common wash and rinse wash as shown in Figure.

Objects

To remove dust, dirt, oil spot, impurities from the garments. To remove size materials from the garments.

To remove starch presents on the garment fabrics.

For soft feeling to wear the garments after purchasing. To achieve buyer washing standard.

Pigment wash

pigment washing effect is made by pigment dyed or printed garments by pigment washing method. This process is similar to normal washing process. The aim of this washing make fading effect or old looking effect on seam area and also garment surface.

Objects

To fading affect or old looking effect on garment and also seam area. For soft feeling to wear the garment after purchasing.

Pigment wash

In pigment washing effect is made by pigment dyed or printed garments by pigment washing method.

This process is similar to normal washing process. The aim of this washing make fading effect or old looking effect on seam area and also garment surface.

Objects

To fading affect or old looking effect on garment and also seam area. For soft feeling to wear the garment after purchasing.

Caustic wash

Caustic wash generally doing on reactive dye, sulpher dye, direct dyed or printed garments and these fabrics are used to manufacture apparels. This washing process is little bit different from the other process. After some pre-treatment like desizing, scouring and bleaching process usually printing is done on fabric. But caustic washing process, printing is done on the fabric without pre-treatment of the fabric. That is given in Figure.

Objects:

To fading or old looking effect on garment and seam abrasion affection seam area. To remove the size materials, starch from the garments.

To increase the color fastness and rubbing fastness. For soft feeling to wear the garments.

To increase the hairiness on garments.

Silicon Wash

Silicon wash is most common and popular washing process. It can be applied almost all types of fabric such as knit, denim, canvas and twill fabrics. This washing process gives more softness and elastic hand feel. In silicon washing process, silicon and softener are used together is shown in Figure.

Objects

It gives durable softness, elastic handle,

It helps to anti pilling affects, dimensional stability and tear resistance.

It helps to fabrics to be cut and sewn more easily allows and improving wears and easy care properties.

Enzyme wash

Enzyme wash generally cellulose enzyme are used. So they are bio chemical substances that behave as catalysts toward specific reactions. This washing process is applied heavy fabrics like jeans and denim. Due to enzymatic abrasion, dye is released from yarns, giving contrasts in the blue color on denim fabrics surface. Enzyme washing method almost replaced stone wash.

Objects

To remove the size materials from the garments.

To remove the starch presents on the garments fabrics.

To achieve the high low abrasion (stone affect) on garment and seam abrasion in sewing area. Enzyme attack as chemically not mechanically for this reason low damage or wastage then stone wash.

For soft feeling to wear the garment.

Especially develop the bio-polishing effect of cotton or denim.

Enzyme attacks more the surface of the fabrics and gives a very smooth surface.

Stone wash

Stone wash is done to produce fading and discolor effect on garments surface by stone. In stone wash stone are perforated and that are produced from volcanic explosion. This stones are also called pumice stone. The washing process is also applied on heavy fabric like denim and jeans to create aged and worn out appearance is given in Figure. Various kind of washing effect can be achieved by changing the amount of liquor ratio, stones size and shape of stones, cycle time, chemical addition and garment load.

Objects

The pumice stones act a brushing action on the fabric surfaces.

The areas where more brushing action take place, there more fading or discolor effect will be developed and the areas where less brushing action takes place, there less discolor effect will be developed.

The multi-layer fabric areas like, collar, cuff, pocket, placket, side seams etc. areas will be brushed more than the single layer areas.

As a result, irregular fading is developed in the garments by the action of pumice stones.

Stone enzyme wash

In garments washing industry stone enzyme washing becoming very popular day by day.

Bleach wash

Bleaching of garments means lightening the color of the indigo dyed garments and apparels are normally dyed with direct or reactive dye. It is also a separate process, which can be applied instead of stone washing or together with stone washing. To avoid yellowing problems this process must be followed by the neutralization process .



Objects

Partial color fading effect is produced

Bleaching is also done after enzyme wash or with stone wash to get more fading effect or super light shade.

Acid wash

It is normally done on the garments from heavy fabrics like denim, course canvas and twill etc. During Acid wash, pumice stones are used. By the action of pumice stones, irregular fading affect is developed on the garments surface is in given in Figure 16. The pumice stones act a brushing action on the garment fabric surface.

Objects

To produce irregular fading effect or old looking effect.

For soft feeling to wear the garments i.e. to improve softness.To increase rubbing fastness.

ETP



Process of Bio-chemical ETP

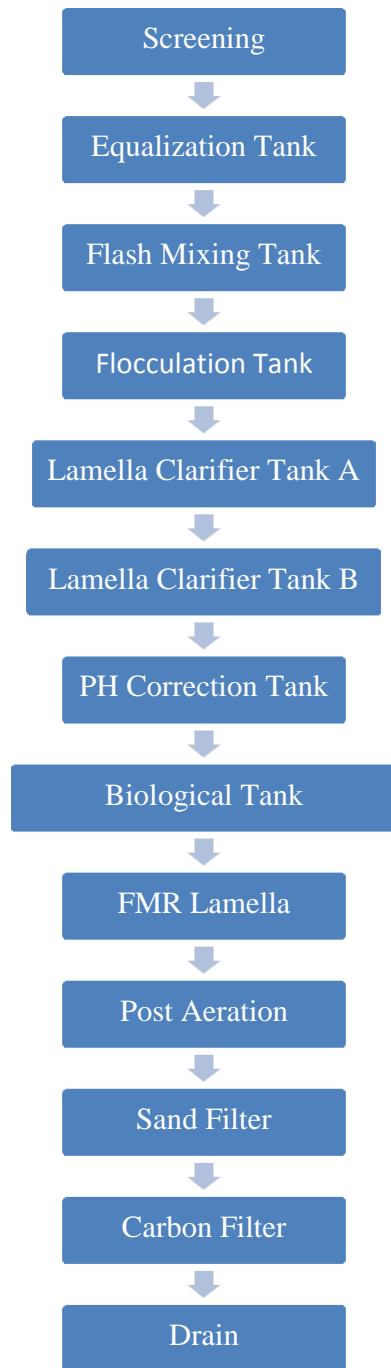


Figure: Process of Bio-chemical ETP

Function of ETP processes

Process	Function
Screening	Extra-large material removes from water.
Equalization Tank	Different color water mixing and cooling. Temperature controlled around 50 ⁰ c
Flash Mixing Tank	Produce sludge. Chemical used: FESO ₄ . 7H ₂ O, Lime
Flocculation Tank	Flocculate sludge in water. Polelectrolyte is used for flocculation
Lamella Clarifier Tank A	Sludge separate from water.
Lamella Clarifier Tank B	Sludge separate from water.
PH Correction Tank	P ^H control in water.
Biological Tank	Bacteria break color particle and feed. Some sludge is produced.
FMR Lamella	Remaining sludge is separated.
Post Aeration	Blowing air for providing oxygen to bacteria for treating and stabilizing the wastewater.
Sand Filter	Water filtration
Carbon Filter	Water filtration
Drain	Water pass out in river.

Table: Function of ETP processes

Tested treated effluent parameter

PH	6-9	
DO	4.5-8 ppm	
COD	Less than 200 ppm	
TSS	Less than 100	
TDS	Less than 2100 ppm	
BOD	Less than 50 ppm	

Table: ETP treatment parameter

Chemical Used in ETP

Lime:

Used for cleaning the water

Polyelectrolyte:

To Flocculate sludge

Urea& DAP:

Used for bacteria feed.

HCL:

Neutralize the waste water controlling the PH.

Ferrous sulphate:

Create sludge.

Equipment for testing

- TDS meter
- DO meter
- PH meter
- Microscope
- Temperature machine

Capacity of treat water

160 m³/day

Impact of Internship

Garments Section

In garments section I have learned about the following topics:

- Know about different types of sample.
- Introducing with Lycra CAD.
- Know about marker.
- How to make marker for production.
- How to improve marker efficiency.
- Know about thread consumption
- Fabric consumption.
- Know about fabric spreading procedure.
- Introduced to different cutting machine.
- Introducing different types of sewing machine.
- Know about different types of sewing machine function.
- Know about different type of stitch.
- Know about different types of stitches.
- Inline inspection & Table inspection
- Final inspection.
- Daily production target calculation
- Inspection procedure of buyer.
- Maintenance section working process etc.

Dyeing Section

In dyeing section I have learned about the following topics:

- Introducing different type of dyeing and finishing machine.
- Different types of dyeing and finishing machine functions.
- Inspection system.
- How to GSM control in stenter and compacting machine.
- Batch section work.
- Different types of test in lab.

Printing Section

In printing section I have learned about the following topics:

- Introducing different types of printing methods.
- Know about different types of chemicals.
- Method of screen preparation.
- Know about print paste.
- Different types of printing and finishing machine functions.
- Know about limitation of printing machine. etc.

Washing Section

In washing section I have learned about the following topics:

- Introducing different type of washing and finishing machine.
- Different types of washing and finishing machine functions.
- Inspection system.
- Batch section work.
- Different types of test in lab.

ETP

In ETP section I have learned about the following topics:

- Know about function of ETP.
- Know details about bio-chemical ETP.
- Process of bio-chemical ETP.
- Different types of chemical used in bio-chemical ETP.
- Capacity of bio-chemical ETP.
- Know about different type's water test. etc.

Conclusion

Industrial attachment is a most important and essential part for completing B.Sc. program in textile engineering. Actually there is large difference between theoretical knowledge and practical knowledge. Industrial training is an essential part for textile education because it minimizes the gap between theoretical and practical knowledge. This industrial training increases our knowledge though a lot about textile technology. It also helps us to know a lot about industrial production process, machineries, industrial management etc. It made us suitable for industrial life. It is also gives some experience to prepare us for the expected or destiny in future.

Overall I can say industrial training would be helpful in future progress.

Limitations

- One months is not enough time to complete industrial attachment. If I get more time I will know lot and complete it more effectively.
- In here washing section is big.
- Some operation is controlled of garments section by head office. Like CAD, Merchandising.
- All operators cannot provide full or right information.
- It is not possible to reporting full information for some limitation. So, I try our best to summarize all the information.

THANK
YOU VERY
MUCH