Faculty of Engineering
Department Of Textile Engineering

REPORT ON
Industrial Attachment

At
Liz Fashion Industry Limited
Building 2,Holding 1, Block C, Shaheed Mosharaf Hossain Road, East Chandura,
Shafipur, Gazipur, Bangladesh

Course Title: Industrial Attachment
Course Code: TE-431
Submitted By

MD. Mostafijur Rahman Topu ID: 142-23-3865

Academic Supervisor
Mst. Murshida Khatun
Senior Lecturer

Department of Textile Engineering
This Report presented in partial fulfillment of the Requirement for the Degree of Bachelor of
Science in Textile Engineering.

Advance in Apparel Manufacturing Technology

Duration: From 18th December 2017 to 18th March 2018
Acknowledgement

At first my gratefulness goes to the Almighty “ALLAH” for giving me strength and ability to complete the industrial attachment report at Liz Fashion Industry Limited successfully.

We are also grateful to our supervisor Mst. Murshida Khatun, Senior Lecturer, Department of Textile Engineering, Faculty of Engineering, Daffodil international University. Her endless patience, scholarly guidance, continual encouragement, energetic supervision, constructive criticism, valuable advice, reading many inferior draft and correcting these at all stages have made it possible to complete this project.

We would like to give special thanks to the supervisors, technicians, operators and all other staffs of Liz Fashion Industry Limited, who were most cordial and helpful to us during internship.

We are also thankful to our all teachers, lab assistant, register sir, coordinators and all the employees of Daffodil International University. We are highly delighted to express our regards & gratitude to honorable Head Prof. Dr. Md. Mahbubul Haque for providing his best support to us.

Finally, we would like to express a sense of gratitude to our beloved parents and friends for their mental support, strength and assistance throughout completing industrial attachment.
Declaration

I hereby declare that the work which is being presented in this report entitled, “Industrial Attachment at Liz Fashion Industry Limited” Is original work of my own, has not been presented for a degree of any other university and all the resources of collected information for this report have been duly acknowledged.

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<thead>
<tr>
<th>Name</th>
<th>Id</th>
<th>Signature</th>
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<tr>
<td>MD. Mostafijur Rahman Topu</td>
<td>142-23-3865</td>
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</table>

Department of Textile Engineering

Faculty of Engineering

Daffodil International University
Letter of Approval

April 15, 2018

To

The Head

Department of Textile Engineering

102, Shukrabad, Mirpur Road, Dhaka 1207

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

Dear Sir,

I am just writing to let you know that this Industrial Attachment in “Liz Fashion Industry Limited” has been prepared by the student bearing ID 142-23-3865 is completed for final evaluation. The whole report is prepared based on the proper investigation and information in Liz Fashion Industry Limited. The student were directly involved in their industrial attachment report activities.

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

Yours Sincerely

....................................................

Mst. Murshida Khatun
Senior Lecturer,
Department of Textile Engineering
Daffodil International University
Table of Contents

Acknowledgement ......................................................................................................................................... i
Declaration.................................................................................................................................................... ii
Letter of Approval ........................................................................................................................................ iii
Chapter-1 ...................................................................................................................................................... 1
Executive Summary ....................................................................................................................................... 1

1.1 Executive Summary .................................................................................................................... 2

Chapter-2 ...................................................................................................................................................... 3
INFORMATION ABOUT FACTORY .................................................................................................................. 3

2.1 Basic Information .................................................................................................................................. 4

2.1.1 Company Name & Address ........................................................................................................... 4

2.1.2 Head Office Address ................................................................................................................ 4
House 316, Road No 4, Gulshan, Dhaka 1206 ....................................................................................... 4

2.1.3 Year of Establishment: .............................................................................................................. 4
1997 ...................................................................................................................................................... 4

2.1.4 Founder and Directors: ............................................................................................................. 4
Mr. Jonglee Fang .................................................................................................................................. 4

2.1.5 History of the Group .................................................................................................................. 4
LDC Group of Industries, one of the promising RMG manufacturers has been operating its activities
to provide excellent products and services since 1997. The company is moving forwards to extend its
ventures from one after another. In many aspects LDC is the model of Garments industries in
Bangladesh. The company was emerged from the sole initiative of Mr. Jonglee Fang the Managing
Director. Since then by the age of 28 years he is holding the position of honorable Managing
Director of the group and the group runs very smoothly under his dynamic leadership. ................. 4

2.1.6 Compliance Certifications .......................................................................................................... 4

2.1.7 Sister Concerns ........................................................................................................................... 5

2.1.8 Export Growth ........................................................................................................................... 5

2.2 General Information .......................................................................................................................... 6

2.2.1 Layout ......................................................................................................................................... 6

2.2.2 Total Area .................................................................................................................................... 7
7, 64000 sq. feet ................................................................. 7

2.2.3 Total Building ........................................................................ 7
2.2.4 Total Shade ........................................................................ 7
2.2.5 Production Capacity .......................................................... 7
2.2.6 Major Buyers With Their Logos ............................................. 7
2.2.7 Transport facility ............................................................... 8

2.3 Human Resource & Organization Structure .................................... 9

2.3.1 Organogram ......................................................................... 9
2.3.2 Total no. of Departments ...................................................... 10
2.3.3 Name of Department ............................................................. 10
2.3.4 Main Production .................................................................. 10
2.3.5 Total no. of Employee .......................................................... 10
2.3.6 Total salary ........................................................................ 10
2.3.7 Vision and mission ............................................................... 11

Chapter-3 .......................................................................................... 12

DETAILS OF ATTACHMENT .................................................................. 12

3.1 Garments Section .................................................................... 13

3.1.1 Layout of Garments Section .................................................. 13
3.1.2 Organogram ....................................................................... 14
3.1.3 Machine Description ............................................................ 15
3.1.4 CAD and Sample Section ...................................................... 16
3.1.5 Store Section ...................................................................... 18
3.1.6 Fabric Relaxation Procedure .................................................. 20
3.1.7 Lab Section ........................................................................ 21
3.1.8 Shrinkage Checking Procedure ............................................. 21
3.1.9 Light Box Checking Instruction .............................................. 21
3.1.10 Fabric Spreading ................................................................. 22
3.1.11 Cutting Section ................................................................. 24
3.1.12 Process of Cutting ............................................................. 24
3.1.13 Different Types of Cutting Machine: ................................................................. 25
3.1.16 Numbering ........................................................................................................ 26
3.1.17 Bundling: ........................................................................................................... 26
3.1.18 Parts of Cutting Machine with Their Functions ............................................. 27
3.1.19 Points Should Concern Fabric Cutting ............................................................ 27
3.1.20 Lay Height ......................................................................................................... 28
Table: 3.3 Lay Height ................................................................................................... 28
3.1.21 Cutting Table Specification ............................................................................ 28
3.1.22 Wastage during Cutting .................................................................................. 28
Figur: 3.17 Organogram of sewing section ................................................................. 30
3.1.26 Flow Process .................................................................................................... 31
3.1.27 Different Type’s Machineries with Functions in Sewing Section ..................... 32
Table: 3.4 Sewing Machine ........................................................................................ 34
3.1.30 Quality control in sewing section ..................................................................... 35
3.1.31 Finishing Section ............................................................................................... 36
3.1.32 Organogram ...................................................................................................... 37
Figure: 3.32 Organogram of Finishing section ............................................................ 37
3.1.36 Final Inspection ................................................................................................ 39
3.1.37 Merchandising Department ............................................................................. 40
3.1.38 Maintenance Section ....................................................................................... 40
3.2.1 Layout ................................................................................................................ 42
3.2.3 Printing Type ....................................................................................................... 44
3.2.4 Printing Process .................................................................................................. 44
3.2.5 Screen Making Process ..................................................................................... 44
3.2.6 Machine .............................................................................................................. 44
3.2.7 Chemical Used in Printing ................................................................................ 46
3.3.1 Process of Bio-chemical ETP ........................................................................... 48
3.3.2 Function of ETP Processes ............................................................................... 49
3.3.4 Equipment for testing ...................................................................................... 50
3.3.5 Capacity of treat water .................................................................................... 51

Chapter 4 ................................................................................................................... 52

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<table>
<thead>
<tr>
<th>Figure No</th>
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List of table

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<td>Table No 3.5</td>
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<td>Table No 3.6</td>
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</tbody>
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Chapter-1

Executive Summary
1.1 Executive Summary

The internationally recognized buyers are looking for those countries for producing there apparel products where different type of mills have established as a non-stop source for the global apparel market, satisfy and meet customer expectation by developing and providing products and services on time, which offer value in terms of quality, price, safety & environment impact. And also assure complete compliance with the international quality standards and also to provide the employees internationally acceptable working condition. In Bangladesh there are different types of textile industries those are producing high quality textile and apparel product. Liz Fashion Industry Limited is one of them. They have different type of cutting, sewing, and finishing machines supplied by mostly Japan, UK, China, Australia, Canada, Germany, Europe etc. which are very latest. It has high production rate finished garments are produce per day. The production is controlled by skill persons. The entire decision maker of the production sector in Liz Fashion Industry Limited is not textile graduate. Finishing is well branded. They produce their product for their buyer and client those are coming from international market like America, Spain, Italy, and Canada. They follow all the system for their machines maintenance’s so production cannot hamper.

In this report, I tried to give some information about Liz Fashion Industry Limited and I observed that Liz Fashion Industry Limited produce high quality garment and fulfill the special requirements from the different types of buyers according to different internationally recommended standard method.
Chapter-2

INFORMATION ABOUT FACTORY

Figure: 2.1 Liz Fashion Industry Ltd
2.1 Basic Information

2.1.1 Company Name & Address

Liz Fashion Industry Limited
Building 2, Holding 1, Block C, Shaheed Mosharaf Hossain Road, East Chandura, Shafipur, Gazipur, Bangladesh

2.1.2 Head Office Address

House 316, Road No 4, Gulshan, Dhaka 1206

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2.1.5 History of the Group

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2.1.6 Compliance Certifications

Liz Fashion Industry Limited realizes the importance of adapting to changes in external environment and keeping the workplace safe and enjoyable for employees to be motivated and productive. Compliance certifications include

- GOTS
- BSCI
- WRAP
- OEKO-TEX
2.1.7 Sister Concerns

- Lida textile and dyeing limited.

2.1.8 Export Growth

Figure: 2.2 Export growth graph
2.2 General Information

2.2.1 Layout

Figure: 2.3 Factory layout
2.2.2 Total Area
7, 64000 sq. feet

2.2.3 Total Building
4

2.2.4 Total Shade
3

2.2.5 Production Capacity

Printing: 6 tons/day (average)

Sewing: 75,000 pieces/day (average)

2.2.6 Major Buyers With Their Logos

<table>
<thead>
<tr>
<th>Buyer Name</th>
<th>Logo</th>
</tr>
</thead>
<tbody>
<tr>
<td>George</td>
<td><img src="image1" alt="George Logo" /></td>
</tr>
<tr>
<td>Haggar clothing</td>
<td><img src="image2" alt="Haggar Logo" /></td>
</tr>
<tr>
<td>Walmart</td>
<td><img src="image3" alt="Walmart Logo" /></td>
</tr>
<tr>
<td>Decathlon</td>
<td><img src="image4" alt="Decathlon Logo" /></td>
</tr>
</tbody>
</table>
Table: 2.1 Buyer of Liz Fashion industry Ltd.

### 2.2.7 Transport facility

**Office Stuff:** Bus, Car

**Product:** Cargo van
2.3 Human Resource & Organization Structure

2.3.1 Organogram

Figure: 2.4 Factory organogram
2.3.2 Total no. of Departments
07

2.3.3 Name of Department

I. Printing Section

II. Garments section
  ➢ Sample
  ➢ Cutting Section
  ➢ Sewing Section
  ➢ Finishing Section
  ➢ Merchandising

III. Maintenance section

IV. Utility section
  ➢ Electricity
  ➢ Gas

V. Store Section

VI. Administration Section

VII. Security Section

2.3.4 Main Production

Garments & printing

Garments

All types of knit underwear, sportswear and outerwear for women, kids, & men.

2.3.5 Total no. of Employee

Almost 2200

2.3.6 Total salary

40 million taka
2.3.7 Vision and mission

Vision

To become a truly global supplier that provides a sustainable growth opportunities for its customer, county and its employees, whilst achieving its goal of becoming the number one value fashion supplier across the world.

Mission

- Be a market leader in the field of value global supplier of RMG.
- Deliver quality fashionable products at affordable prices.
- Be innovative, cost effective and globally competitive.
- Outstrip our customer’s expectations.
- Provide opportunities for growth for our employees.
Chapter-3

DETAILS OF ATTACHMENT
3.1 Garments Section

3.1.1 Layout of Garments Section

Figure: 3.1 Layout of garments section
3.1.2 Organogram

Figure: 3.2 Organogram of garments section
### 3.1.3 Machine Description

<table>
<thead>
<tr>
<th>Section</th>
<th>Name of the Machine</th>
<th>Number of Machine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Store</strong></td>
<td>Fabric inspection machine</td>
<td>2 pc</td>
</tr>
<tr>
<td></td>
<td>Snap testing machine</td>
<td>1 pc</td>
</tr>
<tr>
<td></td>
<td>Washing Machine</td>
<td>2 pc</td>
</tr>
<tr>
<td><strong>Lab</strong></td>
<td>Automatic Cutting Machine</td>
<td>5 pcs</td>
</tr>
<tr>
<td></td>
<td>Cutting Machine</td>
<td>4 pcs</td>
</tr>
<tr>
<td><strong>Cutting</strong></td>
<td>Plain m/c 1 needle</td>
<td>100 pcs</td>
</tr>
<tr>
<td></td>
<td>Plain m/c 2 needle</td>
<td>20 Pcs</td>
</tr>
<tr>
<td></td>
<td>Over lock 4 thread</td>
<td>150 Pcs</td>
</tr>
<tr>
<td></td>
<td>Flat bed</td>
<td>15 Pcs</td>
</tr>
<tr>
<td></td>
<td>Flat lock cylinder bed</td>
<td>26 Pcs</td>
</tr>
<tr>
<td></td>
<td>Flat lock small cylinder</td>
<td>13 Pcs</td>
</tr>
<tr>
<td></td>
<td>Flat lock raw edge cutter</td>
<td>5 Pcs</td>
</tr>
<tr>
<td></td>
<td>Feed of the arm</td>
<td>80 Pcs</td>
</tr>
<tr>
<td></td>
<td>Button hole</td>
<td>15 Pcs</td>
</tr>
<tr>
<td></td>
<td>Bar tack</td>
<td>30 Pcs</td>
</tr>
<tr>
<td></td>
<td>Button stitch</td>
<td>10 Pcs</td>
</tr>
<tr>
<td></td>
<td>Snap button</td>
<td>5 Pcs</td>
</tr>
<tr>
<td></td>
<td>Rib cutter</td>
<td>4 Pcs</td>
</tr>
<tr>
<td></td>
<td>Fusing machine</td>
<td>3 pc</td>
</tr>
<tr>
<td></td>
<td>Heat transfer trace</td>
<td>8 Pcs</td>
</tr>
<tr>
<td></td>
<td>Needle detector machine</td>
<td>2 pc</td>
</tr>
<tr>
<td><strong>Sewing</strong></td>
<td>Spot remover</td>
<td>2 pc</td>
</tr>
<tr>
<td></td>
<td>Thread soaking</td>
<td>2 pcs</td>
</tr>
<tr>
<td></td>
<td>Iron become</td>
<td>30 pcs</td>
</tr>
<tr>
<td><strong>Finishing</strong></td>
<td>Spot remover</td>
<td>2 pc</td>
</tr>
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<td></td>
<td>Thread soaking</td>
<td>2 pcs</td>
</tr>
<tr>
<td></td>
<td>Iron become</td>
<td>30 pcs</td>
</tr>
</tbody>
</table>
3.1.4 CAD and Sample Section

Functions of CAD room:

- Producing pattern
- Marker making
- Calculate marker consumption

Figure: 3.3CAD section

Marker machine specification

Brand name: IOLINE

Manufacturer: Ioline Corporation

Origin: USA

Objectives of marker making:

- Marker is used as a cutting guide for fabric.
- Reduced fabric wastage by using marker.
- It saves time and cost.
Software

For marker making TUKA 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
- Feed of the arm machine

### 3.1.5 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 China.
- Different types of fabric like 100% cotton single jersey, Terry, Fleece & spandex etc.

![Figure: 3.5 Fabric store](image-url)
Different Types of Accessories

<table>
<thead>
<tr>
<th>Main label</th>
<th>Elastic</th>
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<tbody>
<tr>
<td>Care label</td>
<td>Zipper</td>
</tr>
<tr>
<td>Size label</td>
<td>Hit seal label</td>
</tr>
<tr>
<td>Threads</td>
<td>Carton</td>
</tr>
<tr>
<td>Twill tape</td>
<td>Poly</td>
</tr>
<tr>
<td>Hanger sizer</td>
<td>Rope</td>
</tr>
<tr>
<td>Hanger loop</td>
<td>Button</td>
</tr>
<tr>
<td>Price sticker</td>
<td>Garment Marking Chalk</td>
</tr>
<tr>
<td>Tissue paper</td>
<td>Lock pin</td>
</tr>
<tr>
<td>Snap button</td>
<td>Poly sticker</td>
</tr>
<tr>
<td>Hang tag</td>
<td>Gum tape</td>
</tr>
<tr>
<td>Hanger</td>
<td>Eyelet</td>
</tr>
</tbody>
</table>

Table: 3.2 Different Types of Accessories
3.1.6 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

Figure: 3.7 Fabric relaxation machine
3.1.7 Lab Section

![Garments Lab](image)

Figure: 3.8 Garments Lab

Equipment’s List

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

3.1.8 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

3.1.9 Light Box Checking Instruction

Light box is used for checking fabric shade

- F - Florescent
- D65 - Day Light
3.1.10 Fabric Spreading

Spreading means the smooth laying out of the fabric in superimposed layers of specific length. The cutting marker paper is laid in the top of the fabric layer. During spreading number of the plies should be not more than three hundreds but it depends on the thickness of the fabric and the height of the cutting knife.

Types of Fabric Spreading:

1) Automatic Spreading
2) Manual Spreading

Specification of Auto fabric spreading machine

- Brand name: Motovario
- Model: NMRV-030
- Origin: Italy

Figure: 3.9 Fabric spreading (Automatic)
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
3.1.11 Cutting Section

![Figure: 3.11 cutting Section](image)

3.1.12 Process of Cutting

![Figure: 3.12 Process of cutting](diagram)
3.1.13 Different Types of Cutting Machine:

- Specification of Cutting machine

Auto cutter machine:

- Number of machine: 5
- Brand name: Macpi
- Model: 918-70-20
- Origin: Italy

Straight knife cutting machine:

- Machine name: MAC cutting m/c
- Model: KS-AU-V
- Origin: JAPAN
- Type: Heavy duty industrial cloth cutting m/c self Sharpening
- Dimension: 8 inch width ×11 inch length ×24 inch height

Figure: 3.13 Automatic cutting machine
- Weight: 33.5 lb
- Current: A.C (3.3/2.6 amps)
- Speeds: 3000/3600

Figure: 3.14 Straight knife cutting Machine

3.1.16 Numbering

In this stage sticker is attached with all part of cutting part for shade matching. The sticker number maintains cutting number, size number, serial number.

Figure: 3.15 Numbering

3.1.17 Bundling:

Prepare bundling card according to fabric lay report this card maintain

- Date
- Style No
3.1.18 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.

3.1.19 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.
### 3.1.20 Lay Height

<table>
<thead>
<tr>
<th>Fabric type</th>
<th>No. of ply</th>
<th>Lay height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single jersey</td>
<td>90-100</td>
<td>3”</td>
</tr>
<tr>
<td>Rib</td>
<td>60-70</td>
<td>2.5”</td>
</tr>
<tr>
<td>Lycra</td>
<td>80</td>
<td>2.5”-3”</td>
</tr>
<tr>
<td>Viscose</td>
<td>70</td>
<td>1.5”</td>
</tr>
<tr>
<td>Fleece</td>
<td>55-60</td>
<td>3”</td>
</tr>
<tr>
<td>Pique</td>
<td>70-80</td>
<td>2.5”-3”</td>
</tr>
</tbody>
</table>

Table: 3.3 Lay Height

### 3.1.21 Cutting Table Specification

- Total Cutting Table: 6 pcs
- Table Height: 33”
- Table Width: 97.5”
- Table Length: 840”

### 3.1.22 Wastage during Cutting

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

3.1.24 Layout of Sewing floor

Figure: 3.16  layout of sewing floor
3.1.25 Organogram

Figur: 3.17 Organogram of sewing section
3.1.26 Flow Process

The process of joining of fabrics by the use of needle and sewing thread or by other techniques is called sewing.

Figure: 3.18 sewing process

Figure: 3.19 Sewing Section
### 3.1.27 Different Type’s Machineries with Functions in Sewing Section

<table>
<thead>
<tr>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottom hemming</td>
</tr>
<tr>
<td>Belt making</td>
</tr>
<tr>
<td>Loop tack stitch</td>
</tr>
<tr>
<td>Pocket joint stitch</td>
</tr>
<tr>
<td>Zipper joint</td>
</tr>
<tr>
<td>Neck top stitch etc.</td>
</tr>
</tbody>
</table>

**Figure: 3.20 Plain machine**

Application:
- Bottom hemming
- Belt making
- Loop tack stitch
- Pocket joint stitch
- Zipper joint
- Neck top stitch etc.

<table>
<thead>
<tr>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neck piping</td>
</tr>
<tr>
<td>Sleeve piping</td>
</tr>
<tr>
<td>Sleeve joint</td>
</tr>
<tr>
<td>Side seam etc.</td>
</tr>
</tbody>
</table>

**Figure: 3.21 Over lock machine**

Application:
- Neck piping
- Sleeve piping
- Sleeve joint
- Side seam etc.

**Figure: 3.22 Flat lock machine**

Application:
- Bottom hemming
- Sleeve hemming

**Figure: 3.23 Flat lock cylinder bedmachine**

Application:
- Sleeve hem
- Leg hem
<table>
<thead>
<tr>
<th>Figure</th>
<th>Machine Description</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.24</td>
<td>Button Hole machine</td>
<td>To create a hole for button</td>
</tr>
<tr>
<td>3.25</td>
<td>Heat Seal machine</td>
<td>Attached main label with garments</td>
</tr>
<tr>
<td>3.26</td>
<td>Fusing Machine</td>
<td>For interlining</td>
</tr>
<tr>
<td>3.27</td>
<td>Feed of the Arm</td>
<td>Used for neck piping</td>
</tr>
</tbody>
</table>
3.1.28 Sewing Quality checking points:

- Skip/Drop/Broken stitch
- Raw edge
- Size mistake
- Uneven hem
- Uneven cuff

**Figure: 3.28 Rib Cutter machine**
Application:
Cutting rib and make roll

**Figure: 3.29 Button attaching machine**
Application:
To attached button in garment

**Figure: 3.30 Bar tack machine**
Application:
Bar tack stitch

| Table: 3.4 Sewing Machine |

3.1.28 Sewing Quality checking points:
Uneven neck
Uneven shoulder
Uneven placket
Uneven pocket
Twisting
Without care label
Open tack
Sleeve up-down
Stripe up-down
Open seam etc.

3.1.29 Sewing Line quality Check List:

1. Buyer approved sample & measurement sheet check
2. Sample wise input check.
3. Buyer approved trims card check.
4. Buyer approved sample wise style check.
5. All machine thread tension check.
7. All process measurement check.
8. All machine oil spot check.
9. Input time shading, bundle mistake & size mistake check.
10. Buyer approved wise contrast color check.
11. As per buyer requirement wise styling check.
12. All machine stitch tension balance properly.

3.1.30 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

3.1.31 Finishing Section

Figure: 3.31 finishing section
3.1.32 Organogram

Figure: 3.32 Organogram of Finishing section
3.1.33 Finishing Work in Process

Figure: 3.33 Flow process of Finishing section

- Ironing
- Quality Check
- Sewing Defect Check
- Spot Defect Check
- Measurement Check
- Getup Check
- Accessories Attach
- QA Inspection
- Folding
- Assortment
- Poly Packing
- QA Supervision
- Metal Detection
- Cartooning
- Ready For Shipment
3.1.34 Major operations

- Thread Suction (Thread Sucker M/c)
- Ironing
- Quality Check
- Metal detection
- Accessories Attach (Hang Tag, Price Tag, Hanger, Sticker, Security Alarm etc.)
- QA Inspection
- Folding/Rolling
- QA Supervision
- Cartooning/Packaging

3.1.35 Product evaluation process

- Getup check
- Measurement check
- Final garments inspection
- Ratio wise packing inspection

3.1.36 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.

Defect Classification

The client defines the AQL and the maximum number of defective goods allowed in the sample size. Defects detected during visual inspection are usually classified within 3 categories: “Critical”, “Major” and “Minor”

Allowed defect according to lot size
For all sample size, Critical defect= 0

Major= 2.5

Minor= 4.0 / 6.5.

3.1.37 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

3.1.38 Maintenance Section

Figure: 3.34 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.
3.2 Printing Section

3.2.1 Layout

Figure: 3.35 Layout of printing section
3.2.2 Organogram

Figure: 3.36 Organogram of Printing section
3.2.3 Printing Type
AOP- All over printing/ fabric print

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

3.2.4 Printing Process

Figure: 3.37 Printing process

3.2.5 Screen Making Process

Figure: 3.38 Screen making process

3.2.6 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.

![Flatbed printing machine](image)

Figure: 3.39 Flatbed printing machine

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.

![Rotary Screen Printing Machine](image)

Figure: 3.40 Rotary printing machine

<table>
<thead>
<tr>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Binder</td>
<td>To fix color</td>
</tr>
<tr>
<td>Thickener</td>
<td>Maintain viscosity</td>
</tr>
<tr>
<td>Softener</td>
<td>Soft</td>
</tr>
</tbody>
</table>

3.2.7 Chemical Used in Printing
<table>
<thead>
<tr>
<th>Chemical</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>To reduce friction</td>
</tr>
<tr>
<td>Liquor Ammonia</td>
<td>pH control</td>
</tr>
<tr>
<td>Fixing agent</td>
<td>Fixation</td>
</tr>
<tr>
<td>Resist salt</td>
<td>Prevent color bleeding</td>
</tr>
</tbody>
</table>

Table: 3.5 Chemical used in printing

3.2.8 Finishing

Loop steamer machine

Brand name: Slavade

Serial no: 10205

Origin: Italy

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.
3.3 ETP

3.3.1 Process of Bio-chemical ETP

Figure: 3.41 Process of Bio-chemical ETP
### 3.3.2 Function of ETP Processes

<table>
<thead>
<tr>
<th>Process</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening</td>
<td>Extra-largematerial removes from water.</td>
</tr>
<tr>
<td>Equalization Tank</td>
<td>Different color water mixing and cooling.</td>
</tr>
<tr>
<td></td>
<td>Temperature controlled around 50°C</td>
</tr>
<tr>
<td>Flash Mixing Tank</td>
<td>Produce sludge.</td>
</tr>
<tr>
<td></td>
<td>Chemical used:</td>
</tr>
<tr>
<td></td>
<td>FESO₄·7H₂O, Lime</td>
</tr>
<tr>
<td>Flocculation Tank</td>
<td>Flocculate sludge in water.</td>
</tr>
<tr>
<td></td>
<td>Polyelectrolyte is used for flocculation</td>
</tr>
<tr>
<td>Lamella Clarifier Tank A</td>
<td>Sludge separate from water.</td>
</tr>
<tr>
<td>Lamella Clarifier Tank B</td>
<td>Sludge separate from water.</td>
</tr>
<tr>
<td>PH Correction Tank</td>
<td>pH control in water.</td>
</tr>
<tr>
<td>Biological Tank</td>
<td>Bacteria breakecolor particle and feed.</td>
</tr>
<tr>
<td></td>
<td>Some sludge is produced.</td>
</tr>
</tbody>
</table>
### 3.3.3 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.

### 3.3.4 Equipment for testing

- TDS meter

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMR Lamella</td>
<td>Remaining sludge is separated.</td>
</tr>
<tr>
<td>Post Aeration</td>
<td>Blowing air for providing oxygen to bacteria for treating and stabilizing the wastewater.</td>
</tr>
<tr>
<td>Sand Filter</td>
<td>Water filtration</td>
</tr>
<tr>
<td>Carbon Filter</td>
<td>Water filtration</td>
</tr>
<tr>
<td>Drain</td>
<td>Water pass out in river.</td>
</tr>
</tbody>
</table>

Table: 3.6 Function of ETP processes
- DO meter
- PH meter
- Microscope
- Temperature machine

3.3.5 Capacity of treat water
160 m³/day
Chapter 4

IMPACT OF INTERNSHIP
4.1 Garments Section

In garments section we have learned about the following topics:

- Know about garments section.
- Introducing with CAD.
- Know about marker.
- Know about cutting section.
- Know about fabric spreading procedure.
- Introduced to different cutting machine.
- Know about sewing section.
- Introducing different types of sewing machine.
- Know about different types of sewing machine function.
- Know about finishing section.
- Final inspection.
- Maintenance section working process.

4.2 Printing Section

In printing section we have learned about the following topics:

- Introducing different types of printing methods.
- Know about different types of chemicals.
- Different types of printing and finishing machine functions.
- Know about limitation of printing machine. etc.

4.3 ETP

In ETP section we 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.
Chapter-5

CONCLUSION
5.1 CONCLUSION

The industrial training gives me the first opportunity to work in mills. It was a practical experience beyond the normal academic learning. This training gave me actual picture about man, machine, money, material, method and market and interdependence. I have earned the direct practical knowledge about the raw materials, actual running condition of the machine, works of technologist, administration. Industrial training is an essential part for textile education because it minimizes the gap between theoretical and practical knowledge and also increase my thinking level about textile technology.

I have completed my industrial attachment from Liz Fashion Industry Ltd. I learn about Merchandising, Lab, finishing, store, sample, cutting, sewing section, I learned the working procedure of various section and their activities.