Department of Textile Engineering

Report On

Industrial Attachment at

A E Knit Wear Ltd.

Duration: Two Months

From 1st September'14 To 1st November'14

Course Title: Industrial Attachment

Course Code: TE-410

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Date of Submission: 13/12/2014

Declaration

We sincerely declare that,

This Industrial attachment report has prepared by **Md. Al Atik** and **Md. Abir Kaysar** under the supervision of **Md. Azharul Islam**, Lecturer, Department of Textile Engineering, Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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Date :

Acknowledgement

At first my gratefulness goes to Almighty Allah to give me strength and ability to complete this report.

Without help and guidance from numerous instances it would not have been possible to prepare this report in its present form. We wish to express our sincere appreciation to all those individuals and organizations who have directly or indirectly contributed towards the preparation of this project report. We particularly express our gratitude to the following:

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

Finally, we would like to acknowledge that we remain responsible for the inadequacies and errors, which may remain in the report undoubtedly.

Table of Contents

Chapter- One

EXECUTIVE SUMMARY

1 Executive Summary

A E Knit Wear Ltd. has the capability to offer a complete product range for the export textile markets. It has a vast market in the local market. The goal of A E Knit Wear Ltd. is to become the preferred partner for sourcing high quality fabrics from Bangladesh with highly advanced technology & an emphasis on developing local human resources.

A.E Knit Wear Ltd. is well equipped with highly efficient team of management, which is very essential for smooth running of a factory. A E Knit Wear Ltd. is equipped with knitting machinery from Taiwan. Factory commences production from 2009. Its objective is to produce the most sophisticated and high quality fabrics. Now knitting section production per day 4500 kg fabric.

Textile education is based on industrial ground. Theoretical background is not sufficient enough, for why industrial training is an essential part of study to make a technologist technically sound in this field. Industrial training provides me that opportunity to gather practical knowledge.

Chapter- Two

INFORMATION ABOUT THE FACTORY

2 Information about the Factory

2.1 A E Knit Wear Ltd. at a glance

Name of the Factory   :   A.E Knit Wear Ltd.

Type   :   Knitting

Commercial Production   : 2009

Location   : Unique , DEPZ area , Ashulia , Savar , Dhaka

Factory Address   : 210/211 Unique , Ashulia , Savar , Dhaka .

Daily Production Capacity   : Capable to knit about 4.5 ton fabrics.

No. of employees   : 120

Markets   : In Home

Different Departments of A.E Knit Wear Ltd.

- ➢ Administration
- ➢ Production Planning
- ➢ Knitting
- ➢ Quality
- ➢ Store
- ➢ Utility
- ➢ Sample
- ➢ Marketing

Inside of A E Knit Wear Ltd

Inside of A E Knit Wear Ltd

2.2 Location Map

A.E Knit Wear Ltd. is situated at DEPZ area, Ashulia , Savar . It is located at the East Side of Dhaka Tangail High way. Location diagram is not measured with scale. It is only a schematic diagram.

There are two easy ways to go from Dhaka.

i. Motijheel → Satrasta → Mohakhali → Uttara→ Abdullahpur→ Ashulia → Unique → A.E Knit Wear Ltd .

ii. Motijheel → Farmgate→ Mirpur Road → Gabtoli → Savar → Nobinagar → Baipail→ Unique →A.E Knit Wear Ltd.

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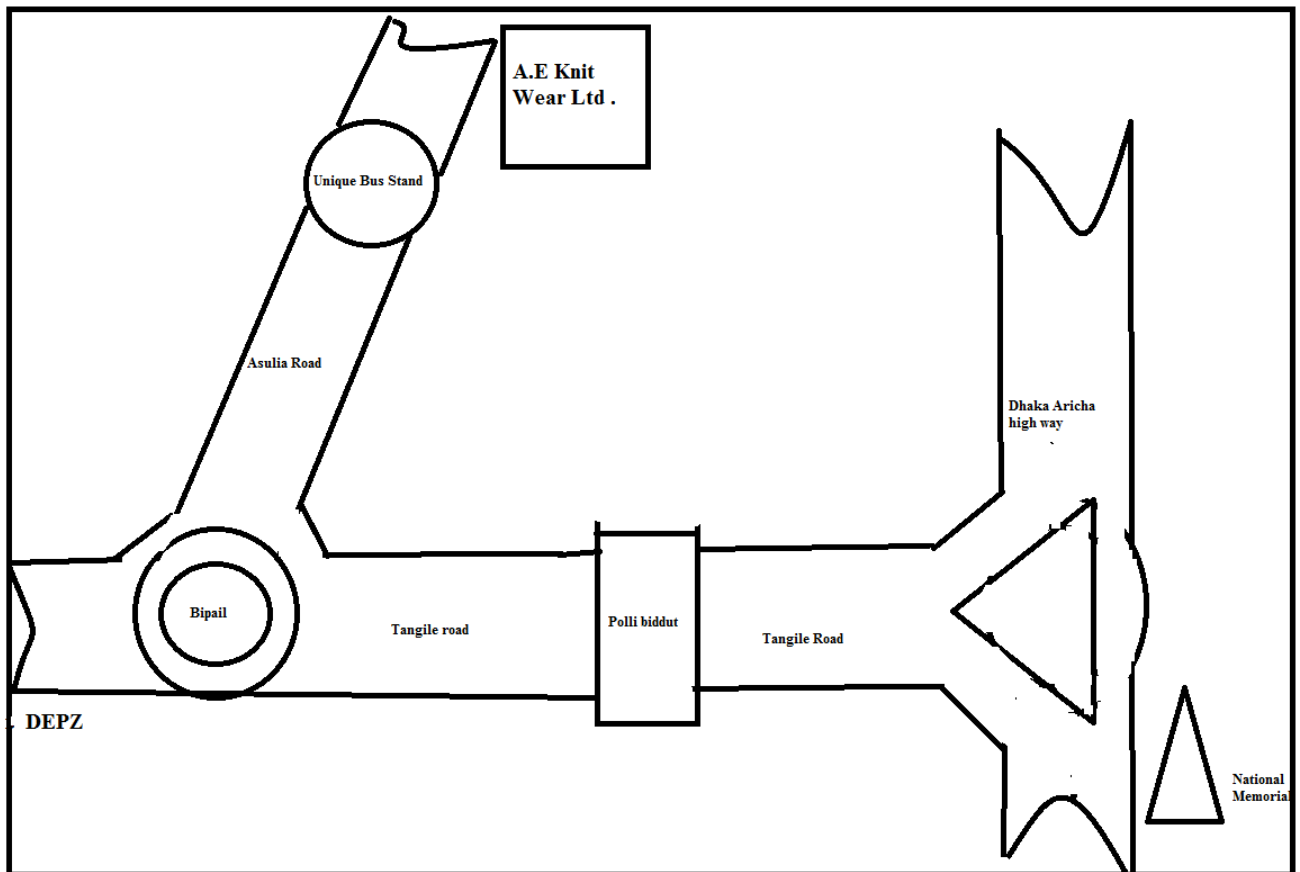
2.3 Factory Capacity

i.	Single Jersey	1500 kg/day
ii.	Rib	1000 kg/day
iii.	Interlock	1000 kg/day
iv.	Fleece	1000 kg/day

Total --- 4500 kg/day

2.4 Organogaram of this Factory

A.E Knit Wear Ltd is well equipped with highly efficient team of management, which is very essential for smooth running of a factory.

Managing Director
↓
Director
↓
General Manager
↓
Deputy General Manager
↓
Manager
↓
Senior Executive
↓
Executive
↓
Supervisor
↓
Quality Controller
↓
Fitter
↓
Operator
↓
Assistant operator
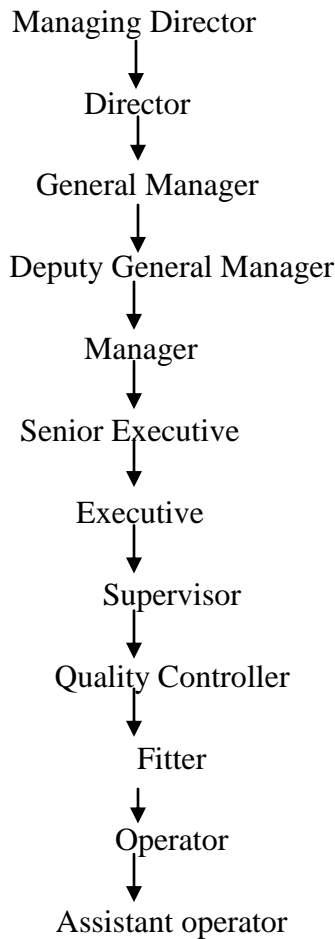
2.5 Shift Change

There are two shifts per day in A.E Knit Wear Ltd. So each shift contain twelve hour.

Shift	Start	End
A	8:00 A.M.	8.00 P.M.
B	8.00 P.M.	8:00 A.M.
General	8.00 AM	8.00 PM

2.6 Management System

- Two mechanical fitters for per shift.
- One skilled operator for each machine
- One helper for two machine
- Loader for carrying the yarn package

2.7 Mission and Vision

- Gain market leadership in high value.
- Dominate markets in high quality both home and abroad.
- Ultimate satisfaction through providing on-time delivery with correct Quality Products & Services
- From knit wear factory try to turn into a knit composite factory.

Chapter - Three

DESCRIPTION OF ATTACHMENT

3 Description of Attachment

3.1 Definition (Knitting)

Knitting is considered to be the second most frequently used method of fabric construction, after weaving. It is one of the several ways to turn thread or yarn into cloth. knitting is the process of construction of a fabric made of interlocking loops of yarn by means of needles. The loops may be either loosely or closely constructed, according to the purpose of the fabric. The loops or stitches are interlocked using a needle which holds the existing loop and a new loop is formed in front of the old loop. The old loop is then brought over the new loop to form the knitted fabric. Knitting is different from weaving in the sense that a single piece of yarn can be used to create fabric. The knitted fabric consists of horizontal rows known as courses and vertical columns of loops known as wales.
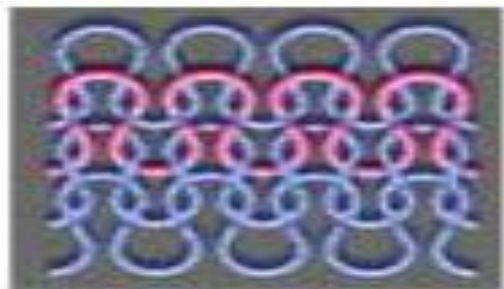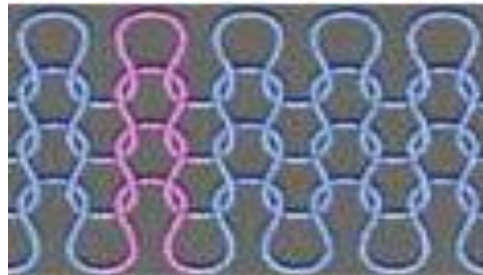
courses   wales

Today, knitting is practiced manually, or with the help of machines. Knitted fabric has certain special characteristics that make it suitable for creating a wide range of garments and accessories like tights, gloves, underwear and other close-fitting garments. The structure of the loop of knitted fabric stretches and molds to fit body shapes. The popularity of knitting has grown a lot within the recent years owing to the adaptability of various man-made fibers, the increased versatility of knitting techniques and the growth in demand for wrinkle-resistant, stretchable, snug-fitting fabrics (particularly in the range of

sportswear and other casual apparels). Today, knitted fabrics form an integral part of hosiery, underwear, slacks, sweaters, suits and coats, rugs and other home furnishing items. Knitting industry has two main divisions:

- One division produces knitted goods for apparel manufacturers, for sewing centers, for consumers and for others.

- Other division produces completed apparel like hosiery, sweaters and underwear.

The pictures of decorative knitted fabric are following:

3.2 Raw Materials

Raw material is a unique substance in any production oriented textile industry. It plays a vital role in case of continuous production & for high quality fabric. **A.E Knit Wear Ltd .**takes yarn as its raw materials for its initial production of knitted fabric to make garments from different spinning mills**.** Maximum amount of raw cotton is collected from **Square Spinning ,Korotoa Spinning, Sowkat spinning** , **Viyella Tex Group and from abroad** . It depends on different of spinning mills of home and abroad to collect other type of yarn as it requires.

Types-

Natural and synthetic, Cellulosic and non-cellulosic all kind of yarn are used as raw materials in this mill. Generally, Cotton, Polyester, Viscose are mostly used in knitting departments.

Figure (3.2): yarn Package

3.3 Raw Materials Used

Yarn:

Fiber composition	Count	Yarn type
Cotton	16/1, 20/1, 30/1, 34/1, 40/1	Carded
	16/1, 20/1, 30/1, 40/1,	Combed
PC	16, 20, 30,40	Carded or Combed
CVC	12.5, 20, 30, 38, 40, 45, 26/2	Combed
Viscose	16, 20, 30, 40	Combed
Spandex	20D, 40D,60D	

Needle:

    i.   Gorz Beckert-Germany.

    ii.   Sumnung-Korea.

    iii.   Sagura-Japan.

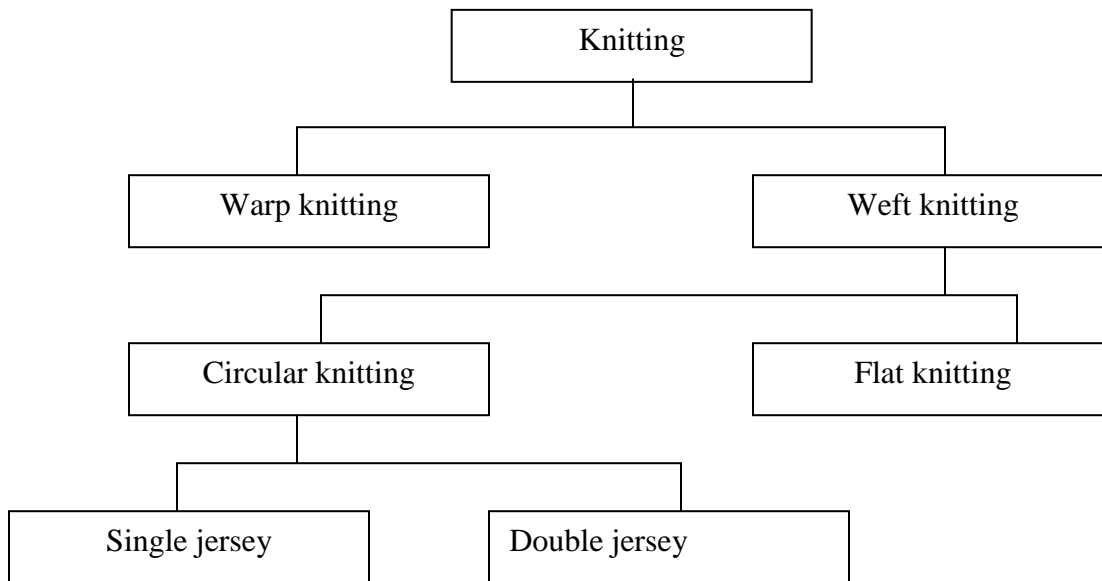**Cam:**

    i.   Kern Lever-Germany.

    ii.   Christop Lever-Germany.

Lubrication Oil:

    i.   BP-22 (Needle Oil) ---- Origin-Germany.

    ii.   BP-60 (Base Oil) --------Origin-Germany.

3.4 Classification of Knitting Section

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                          ┌─────────────┐
                          │   Knitting  │
                          └──────┬──────┘
               ┌─────────────────┴─────────────────┐
        ┌──────────────┐                   ┌──────────────┐
        │ Warp knitting│                   │ Weft knitting│
        └──────────────┘                   └──────┬───────┘
                         ┌──────────────────┬──────┘
                  ┌──────────────┐   ┌──────────────┐
                  │Circular knitting│ │ Flat knitting│
                  └──────┬───────┘   └──────────────┘
              ┌──────────┴──────────┐
       ┌──────────────┐      ┌──────────────┐
       │ Single jersey│      │ Double jersey│
       └──────────────┘      └──────────────┘
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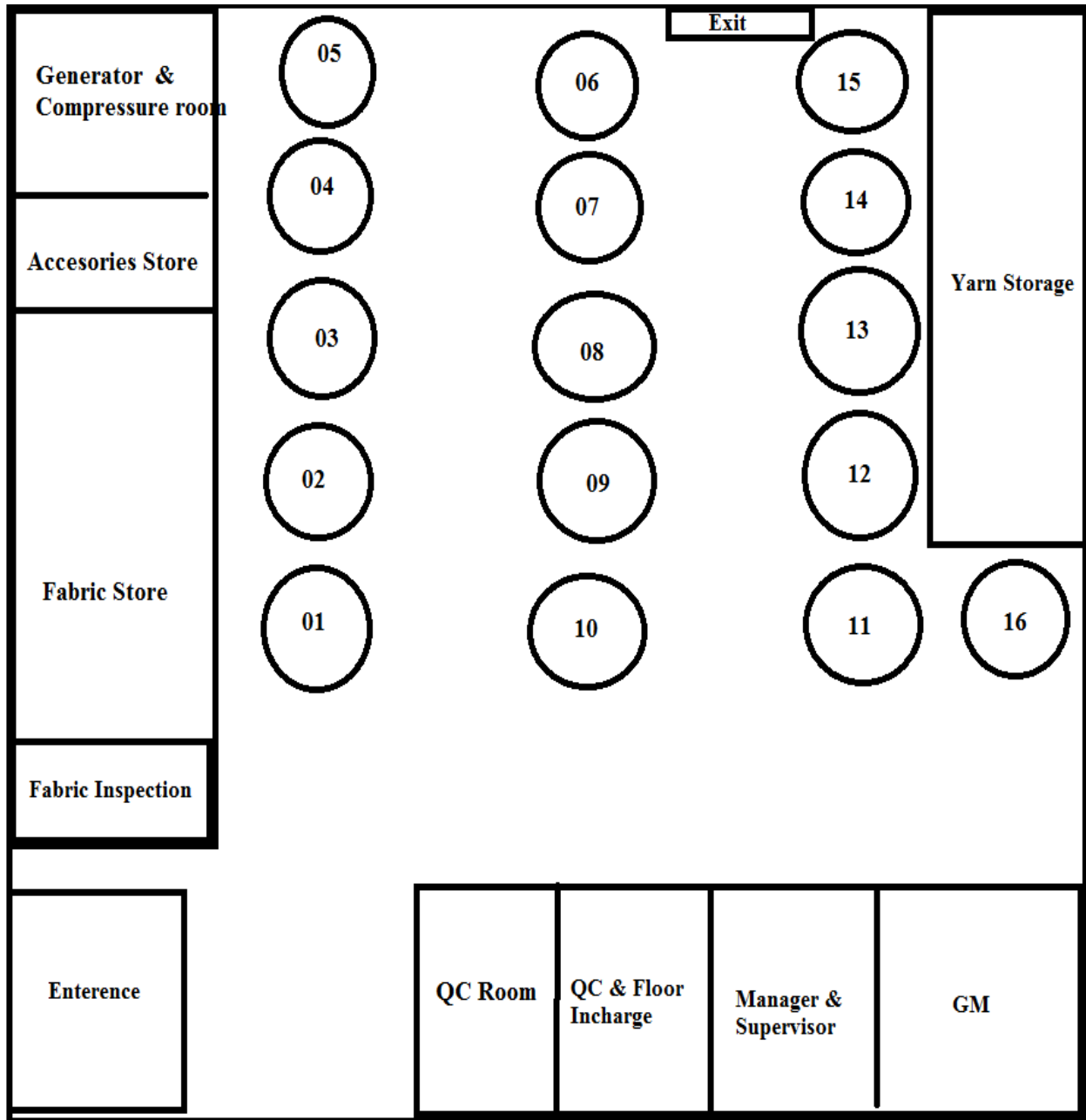
3.5 Circular Knitting Section

Circular knitting machine which is widely used throughout the knitting industry to produce fabric. This machine can be built in almost any reasonable diameter and the small diameter of up to five, which are used for wear. Plain circular machine uses only one sets of needles, circular rib machine uses two sets of needles i.e. Cylinder needle and Dial needle, the interlock circular knitting m/c also uses two sets of needles by needles are long and short respectively for both dial and cylinder, that is why multiple design and thick fabric can be produce with that machine. That machine is also called double Jersey machine.

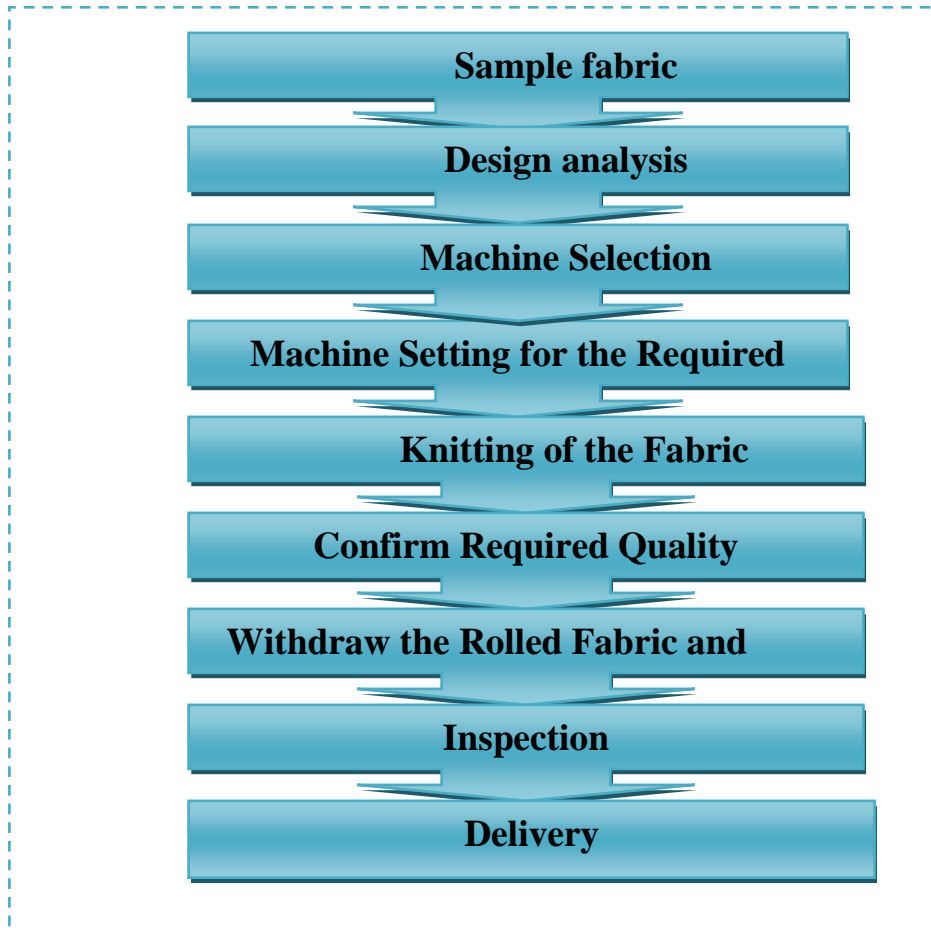Figure (3.5): Circular knitting machine

3.6 Layout of Knitting Floor

3.7 Specifications of Circular Knitting Machines

Serial no.	Name and Origin	m/c Dia	m/c gauge	m/c type
1	T/YEING Taiwan	40	24	Single Jersey with Lycra
2	TAIFUNG Taiwan	38	24	Single Jersey With Lycra
3	T/YEING Taiwan	32	28	Single Jersey With Lycra & Fleece
4	LEE YOUNG Taiwan	34	24	Single Jersey With Lycra
5	MASA Taiwan	36	24	Single Jersey With Lycra & Fleece
6	MASA Taiwan	36	22	Single Jersey With Lycra & Fleece
7	T/YEING Taiwan	32	24	Single Jersey With Lycra & Fleece
8	T/YEING Taiwan	30	22	Single Jersey With Lycra & Fleece
9	T/YEING Taiwan	30	22	Single Jersey With Lycra & Fleece
10	T/YEING Taiwan	32	24	Single Jersey With Lycra & Fleece

11	T/YEING Taiwan	32	24	Single Jersey With Lycra & Fleece
12	SHIE DIM Taiwan	30	22	RIB /Interlock
13	SHIE DIM Taiwan	32	18	RIB /Interlock
14	SHIE DIM Taiwan	30	24	RIB /Interlock
15	SHIE DIM Taiwan	36	22	RIB /Interlock
16	SHIE DIM Taiwan	20	18	RIB /Interlock

3.8 Process flow chart of knitting

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┌─────────────────────────────────────────┐
│                                          │
│         ┌───────────────────────┐        │
│         │     Sample fabric     │        │
│         └───────────────────────┘        │
│         ┌───────────────────────┐        │
│         │    Design analysis    │        │
│         └───────────────────────┘        │
│         ┌───────────────────────┐        │
│         │   Machine Selection   │        │
│         └───────────────────────┘        │
│    ┌──────────────────────────────┐      │
│    │ Machine Setting for the Required │  │
│    └──────────────────────────────┘      │
│         ┌───────────────────────┐        │
│         │  Knitting of the Fabric  │     │
│         └───────────────────────┘        │
│       ┌─────────────────────────┐        │
│       │ Confirm Required Quality │       │
│       └─────────────────────────┘        │
│     ┌───────────────────────────┐        │
│     │ Withdraw the Rolled Fabric and │   │
│     └───────────────────────────┘        │
│         ┌───────────────────────┐        │
│         │      Inspection       │        │
│         └───────────────────────┘        │
│         ┌───────────────────────┐        │
│         │       Delivery        │        │
│         └───────────────────────┘        │
│                                          │
└─────────────────────────────────────────┘
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3.9 Description of the Production Process

In every mill, there maintains a sequence in production processing. It is also followed in this mill where I was in industrial attachment. The process sequences are in list below:

i.   Firstly, knitting manager gets a production sheet from merchandisers as accordance as consumer requirements. Then he informs or orders senior production officer about it.

ii. Senior production officer informs technical in charge and knows about m/c in which the production will be running

iii. Technical in charge calls for leader of mechanical fitter troops, they two take decision about m/c for production considering m/c condition, production capacity, maintenance complexity etc.

iv. Production officer with experienced mechanical fitter adjusts required stitch length and grey GSM (gram per square meter) for required final GSM.

v.   Supervisor check daily production regularity and make operators conscious about finishing in due time.

vi. Operators operate machine in highly attention as if there were no faults in the fabrics. If he is sure about any fabric fault, then he call for mechanical fitter in duty. Mechanical fitter then fixes it if he can or he informs technical in-charge. He then comes in spot.

vii. After required production and final inspection in 4-point system, they are sent in dyeing section

3.10 Production Parameter

i. Machine Diameter

ii. Machine rpm (revolution per minute)

iii. No. of feeds or feeders in use

iv. Machine Gauge

v. Stitch length

vi. Required time

vii. Machine running efficiency

viii. Count of yarn

3.11 Considerable Point to Produce Knitted Fabric

i. Type of fabric or design of fabric

ii. Yarn count

iii. finished GSM

iv. diameter

v. color

vi. Type of yarn

vii. stitch length

3.12 Relationship between Knitting Parameters

i. If Stitch length increase then GSM decrease.

ii. If machine gauge increase then fabric width increase.

iii. If shrinkage increases then fabric width decreases.

iv. For finer gauge, finer count yarn should use

v. Grey GSM should be less than finish GSM.

vi. If yarn count increase (courser) then fabric width increase GSM increase.

vii. If stitch length increase then fabric width increase and WPI decrease.

3.13 Factor that should be Change in Case of Fabric Design Change

i. Cam setting

ii. VDQ Pulley setting

iii. Needle arrangement
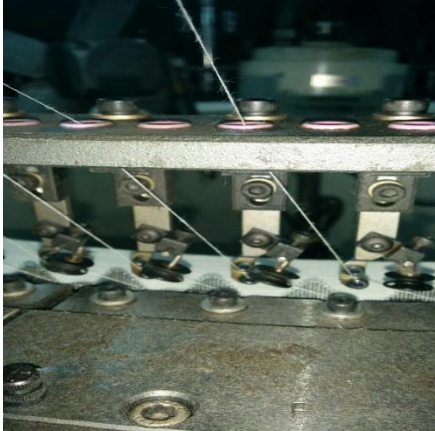
3.14 Yarn Path from Creel to Needle

Yarn guide

Tensioner (spring type)

Wheel

Auto stopper

Suction pipe

Feeder

Latch needle

Yarn package

Cylinder

Creel

Knitted fabric

Cloth roller
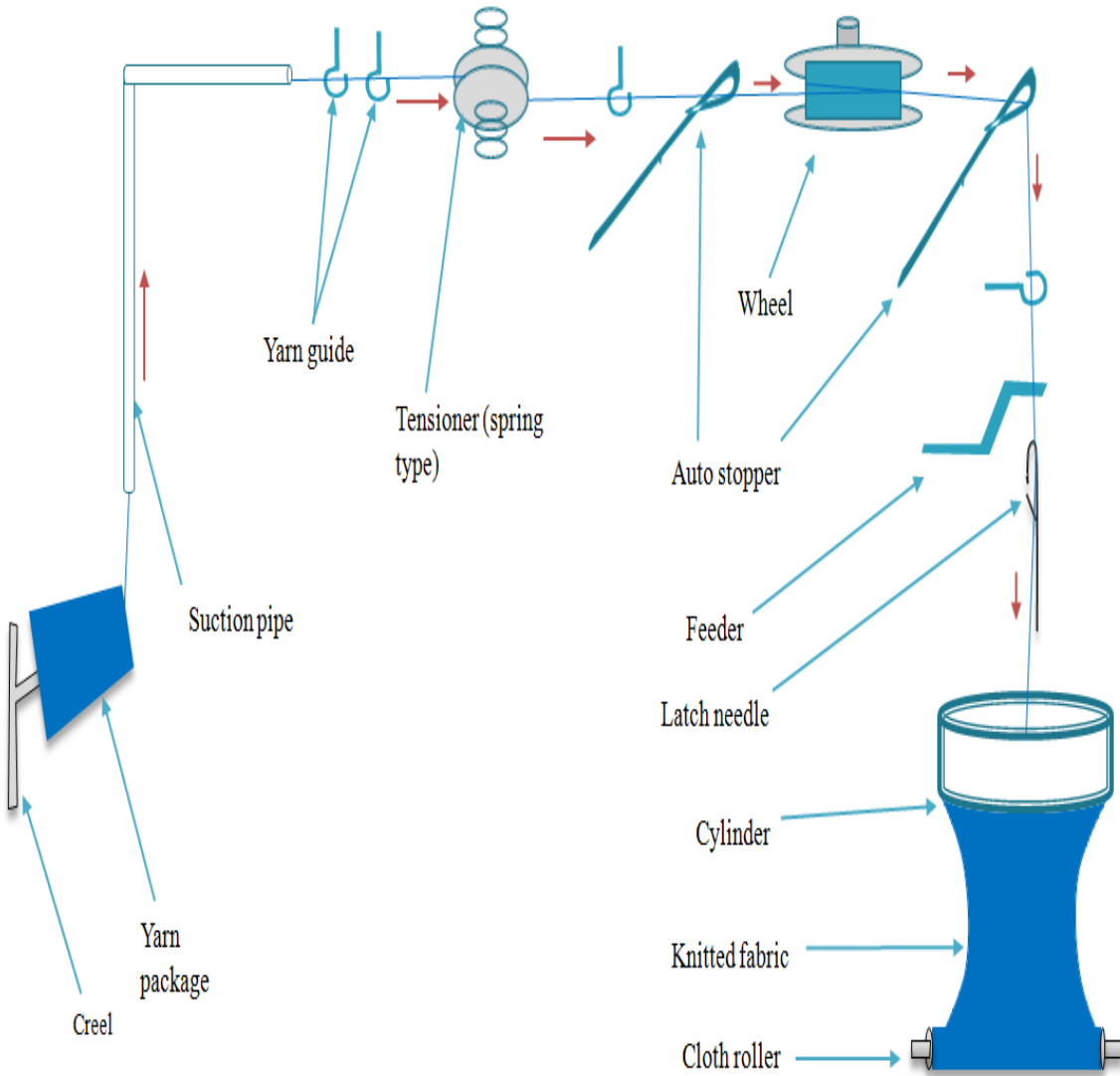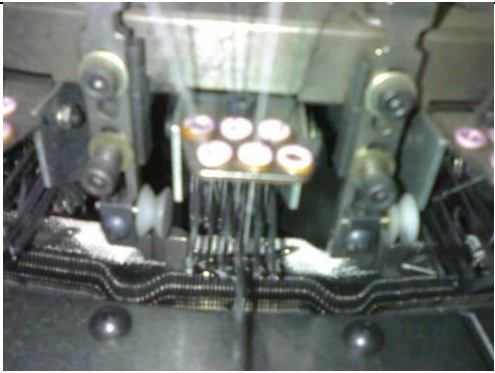
3.15 Description of Important Machine Parts
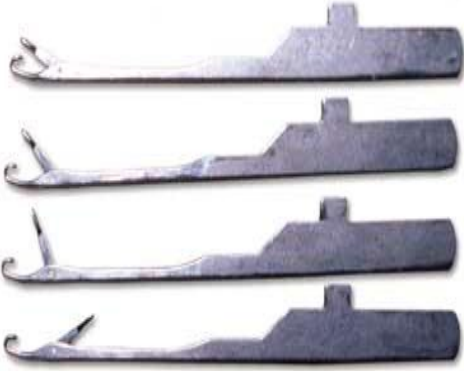
Creel: Creel is a part of a knitting machine. Hear yarn package are store and ready to feed in the machine	
VDQ pulley: It is a very important part of the machine. It controls the quality of the product. Altering the position of the tension pulley changes the G.S.M. of the fabric. If pulley moves towards the positive directive then the G.S.M. is decrease. And in the reverse direction G.S.M will increase.	

Pulley belt: It controls the rotation of the MPF wheel.	
Inlet and outlet stop motion: It is a important parts of the machine. It stops the machine instantly when a yarn is break.	
Yarn guide: Its help the yarn to feed in the feeder.	

MPF Wheel: Its control the speed of the MPF. Pulley belt gives motion to the wheel.	
MPF: Its is Mamenger positive feed. Is is also an important parts of the machine. It's give positive feed to the machine.	
Feeder ring: It is a ring. Where all feeders are pleased together.	
Feeder: Feeder is help yarn to feed in to the machine.	

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.	
Needle track: Where all needle is placed together in a decent design.	
Sinker: It is most important element of the machine. Its help to loop forming, knocking over and holding down the loop.	

Sinker ring: Sinker ring is a ring. Where all sinkers are pleased together.	
Cam box: Where the cam are set horizontally	
Cam: Cam is device s which converts the rotary machine drive in to a suitable reciprocating action for the needles and other elements.	
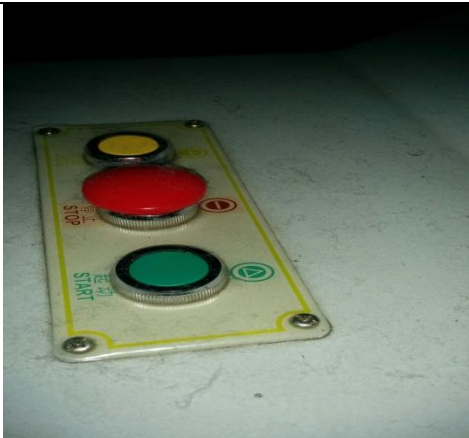
Lycra Attachment: Lycra is placed hear. And feeding to the machine.	
Lycra stop motion: It is one kind of stop motion to stop the machine when the lycra is break.	
Cylinder: Needle track are situated hear.	

Cylinder Balancer: It helps the cylinder to set in a proper alignment.	
Screen: It is a digital screen. Which show the all machine information and we can give command to the machine.	
Automatic oiler: Its give the machine oil all the time properly and automatically.	

Inverter: Its is the heart of the circular knitting machine. Its control the speed of the machine.	
Power Switch: To give the power to the machine.	
ON/OFF Switch: It help the m/c to start and stop.	
Manual drive: To drive the machine manually.	

Machine motherboard: All the Electronic parts are placed hear.	

3.16 Yarn Count Used in According to Grey GSM

Name of required fabric	Grey gsm	Finish gsm	Yarn count	Stitch length(mm)	Lycra count(D)	Machine gauge	Machine diameter
Single jersey	90	90	50/s cc	2.45		24	30
Single jersey	105	120	36/s cc	2.61		28	30
Single jersey	145	160	26/s cc	2.77		28	30
Single jersey	185	200	20/s cc	2.90		20	30
Single jersey	260	275	30/2 kc	3.10		18	30
Single jersey	135	150(silicon finish)	28/s kc	2.62		24	30
Single jersey (3% viscose)	165	180(after wash 190-200)	24/s kc	2.74		20	30
Slub single jersey(organic cotton)	100	110	40/s	2.61		24	34
Lycra single jersey	175	190	34/s cc	3	20	24	30
A/Stripe single jersey	195	210(after peach finish)	18/s cc	2.96		20	26
Multi feeder single jersey	195	"	20/s cc	3		24	36
Y/D STBPQ	210	220	18/s kc	3.10		20	30
Suede jersey	265	280	30/2 kc	3.10		18	30
Lycra fleece	245	260/270	30/s cc	2.8	20	24	30
Lycra Twill	210	220	34/s cc	3.05	75/D	24	30

fleece					poly		
Frency	245	260	20/s kc	3.10		20	30
Lycra F/Terry	225	240	30/s cc	2.80	20	24	30
Thermal	210	220	26/s kc	3		18	30
Thermal	225	240	24/s kc	3.20		18	30
1×1 Normal Rib	210	220	28/s cc	2.70		18	30
H/F Lycra 2×1 Rib	385	400	20/s kc	2.87	70	18	40
2×1 Rib	225	240	24/s kc	2.75		18	30
Polo PQ	185	200	26/s	2.60		24	30

3.17 Relation between grey and finish GSM

Finish process/Color shade %	(%)Percent increase/decrease
1) white	15% to 18% increase
2) Light color (0.5% – 2%)	18% to 20% increase
3) Medium color (2% - 3.5%)	20% to 23% increase
4) Deep color (3.5 %– 6%)	23% to 25% increase
5) Extra deep (6%- 9%)	25% to 30% increase

3.18 Relation between Fabric Diameter and Machine Diameter

Count	Finish GSM	Grey fabric diameter increases then machine diameter
30	142	5-8%
28	155	8-12%
26	165	12-15%
24	180	15-20%
20	200	20-25%

3.19 Production Calculation

Production / shift in kg $= \dfrac{\text{NOF x NON x RPM x SL x Effci x 1.09 x 60 x 8}}{\text{1000 x 840 x Ne x 2.204}}$

$\text{GSM} = \dfrac{\text{CPI x WPI x SL x 39.37 x 39.37 x Tex}}{\text{1000 x 1000}}$

Production / Shift in meter $= \dfrac{\text{Course/min}}{\text{Course/cm}}$

$$= \dfrac{\text{RPM×No.of Feeder×60×12×efficiency}}{\text{Course/cm×100}}$$

Fabric width in meter $= \dfrac{\text{Total no.of wales}}{\text{Wales/cm×100}}$

$$= \dfrac{\text{Total no.of Needles used in Knitting}}{\text{Wales/cm×100}}$$

Measurement of lycra%

S/L Cotton $= \dfrac{\text{Yarn Speed (cotton×1000)}}{\text{No.of Needle ×RPM}}$

S/L Lycra $= \dfrac{\text{Yarn speed (lycra×1000)}}{\text{No.of Needle×1000}}$

Now,

Lycra % $= \dfrac{\text{Lycra Denier×Lycra speed×100}}{\text{(Lycra denier×Lycra speed)+(cotton denier×cotton speed)}}$

Counter $= \dfrac{\text{1000×840×Ne×2.204×30(for 30 kg)}}{\text{NON×NOF×SL(mm)×1.09}}$

Industrial Calculation of A.E Knit Wear Ltd

Collect sample (s/j) by G.S.M cutter and weighted from the weighting balance.

e.g.; → form balance we get 1.838g grey fabric

so, Gray G,S.M $= 1.838 \times 100 \; g/m^2$

$$= 183.8 \text{gm/m}^2$$

Calculate Finish G.S.M as like procedure

By calculation finish G.S.M $= 235 \text{g/m}^2$

From finish G.S.M calculating grey GSM, SL, count:

→ Suppose a fabric involve 180 finishes G.S.M

So, gray G.S.M $= \dfrac{Finish\,G.S.M}{1.3} = \dfrac{180}{1.3} = 138$

So, count $= \dfrac{4320}{F.G.S.M} = \dfrac{4320}{180} = 24/s$

So, S.L $= \dfrac{95351.5}{count \times G.GSM} = \dfrac{95351.5}{24 \times 138} = 28.78$ cm = 2.9 mm

3.20 Method of Increasing Production

By the following methods the production of knitted fabric can be increased:

i. **By Increasing Machine Speed:**

Higher the m/c speed faster the movement of needle and ultimately production will be increased. But it has to make sure that excess tension is not imposed on yarn because of this high speed.

ii. **By Increasing the Number of Feeder:**

If the number of feeder is increased in the circumference of cylinder, then the number of courses will be increased in one revolution at a time.

iii. **By Using Machine of Higher Gauge:**

The more the machine gauge, the more the production is. So by using machine of higher gauge production can be increased.

iv. **By Imposing Automation in the Machine:**
   a) Quick starting & stopping for efficient driving system.
   b) Automatic machine lubrication system for smoother operation.
   c) Photo electric fabric fault detector.

v. **By Imposing other Developments:**
   a) Using creel-feeding system.
   b) Applying yarn supply through plastic tube that eliminates the possibilities of yarn damage.
   c) Using yarn feed control device.

3.20 Sample Analysis

Single jersey plain

ℓ ℓ ℓ ℓ

ℓ ℓ ℓ ℓ

ℓ ℓ ℓ ℓ

ℓ ℓ ℓ ℓ

K K K K

K K K K

K K K K

K K K K

Polo Pique

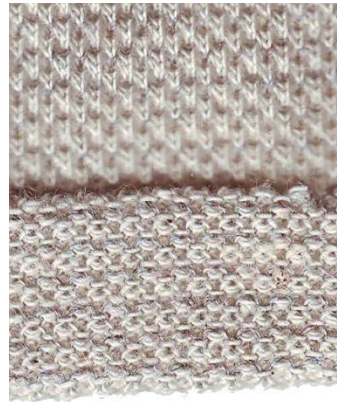ℓ ∧ ℓ ∧

ℓ ∧ ℓ ∧

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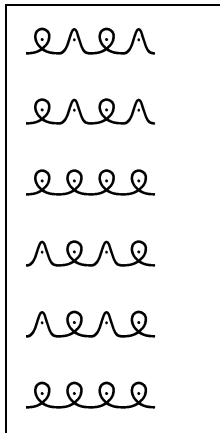
∧ ℓ ∧ ℓ

TTKK

KKTT

TTKK

KKTT

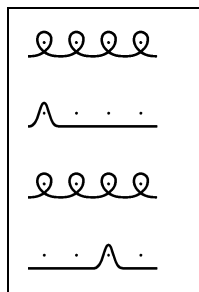**double lacoste**

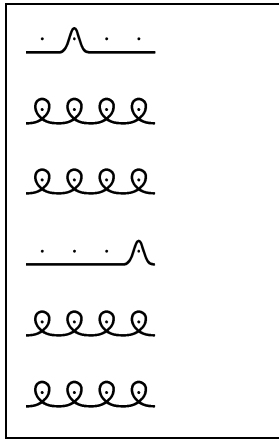KTTKKK

KKKKTT

KTTKKK

KKKKTT

Two yarns fleece (in-lay):
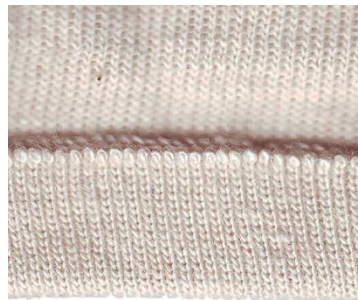

MKTK

MKMK

TKMK

MKMK

Three-thread fleecy:
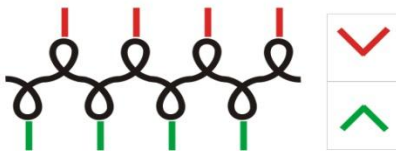

KKMKKM

KKMKKT

KKMKKM

KKTKKM

1X1 Rib

2X2 Rib
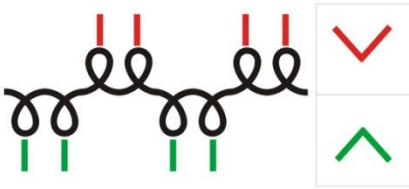
Plain Interlock
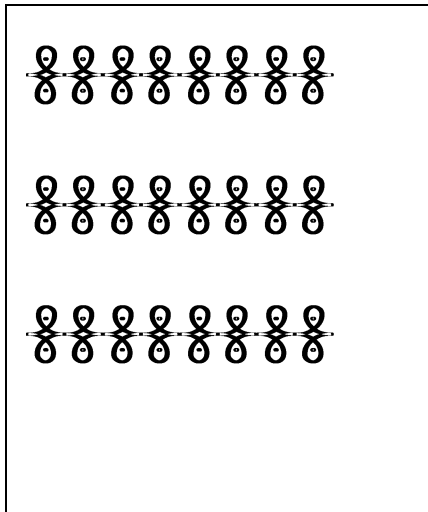
3.21 Fabric Gallery or Sample Attachment
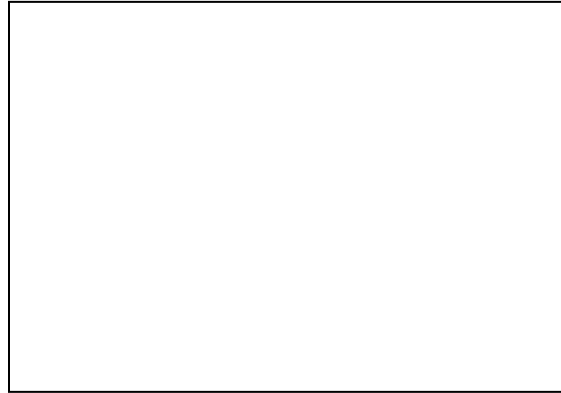
Single jersey
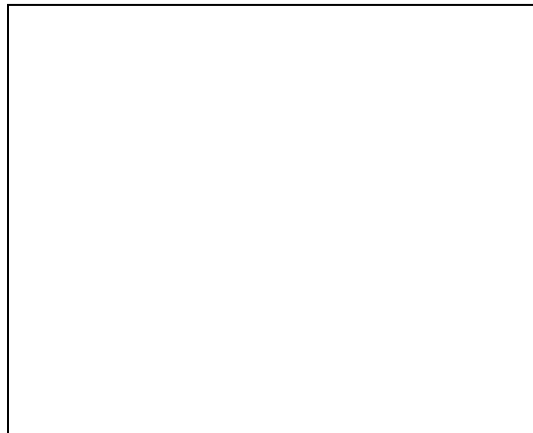
Slub single jersey
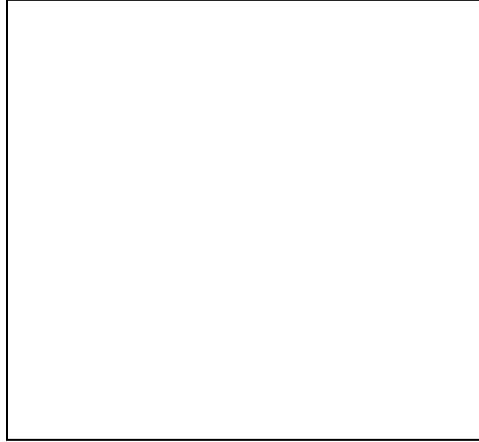
Stripe single jersey
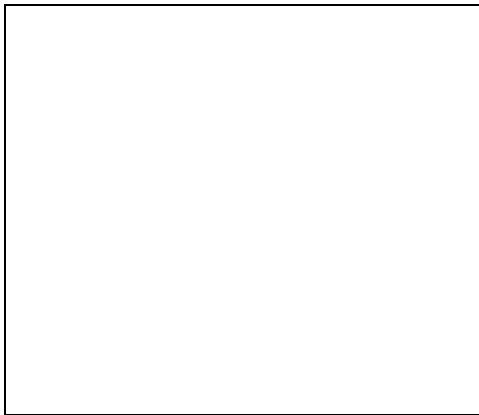
Single lacost
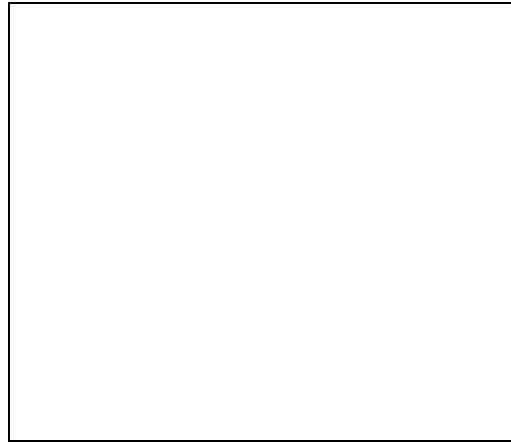
Grey Fleece

Yarn dyed fleece
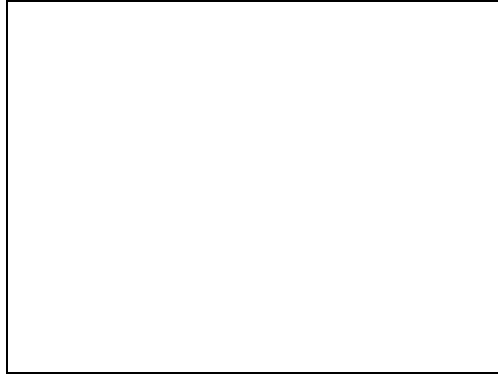
Diagonal terry

Pique
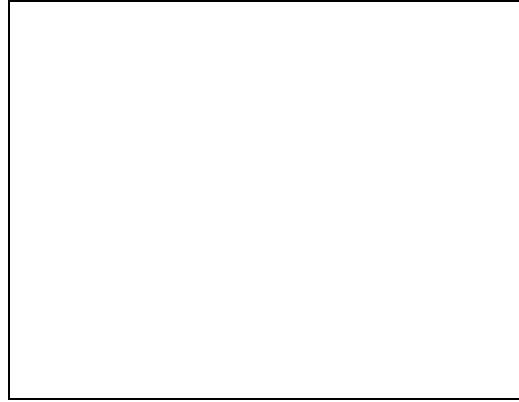
Plain interlock
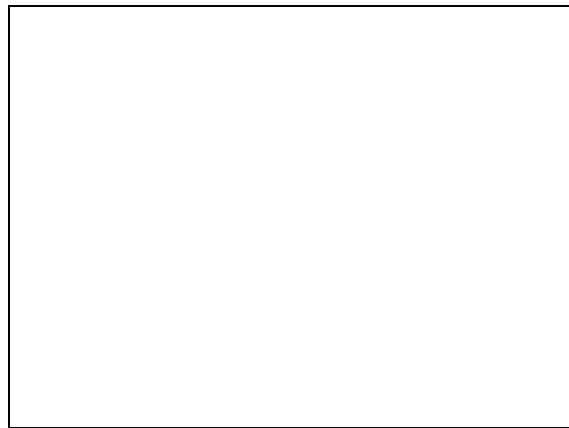
Viscose single jersey
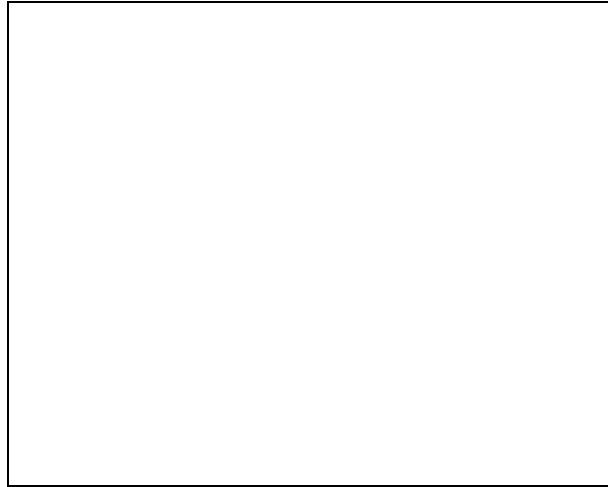
Single Jersey with Lycra

Stripe Interlock

3.22 Fabric Inspection

3.22.1 Fabric Inspection Method

Set fabric roll in machine

↓

Run the machine

↓

Check the faults

↓

Record the faults

↓

Accept/Reject

↓

Send for next process
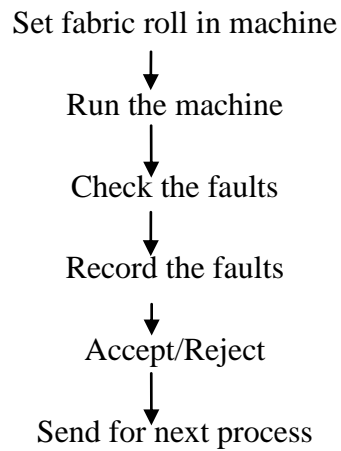
To detect and identify the fault in fabric by the knitting, visual assessment on Inspection m/c.

Figure (3.22.1) : Fabric Inspection m/c

3.22.2 Fabric Inspection System

4-point system, a standard establish under ASTM D5430-07 (2011) is a standardized test method for fabric visually inspecting and grading. In the following table the penalty evaluation points has been given for different length of fabric defect and dimension of holes.

Length of Defect	Penalty Point
Upto 3"	1
3-6"	2
6-9"	3
Over 9"	4
Hole 1" or less	2
Hole over 1"	4

3.22.3 How to use the 4 point system for fabric inspection

a) At first fabric inspection by inspection m/c.

b) Then identifying the defect.

c) Then penalty points based on defects and defect length.

d) Calculation method of total penalty points for total defects found in a fabric roll.

3.22.4 Calculation of total points per yards

In 4 point system fabric quality is evaluated by unit **points/100 sq. yds**.

Points / 100 sq. yd. = (Total points in roll * 36 * 100)/ (Fabric length in yards * Fabric width in inches)

Normally fabric roll containing 40 points per 100 square yard are acceptable.

1	2	3
Up to 20 point	21 to 28 point	Above 28
A	B	Reject

3.22.5 Faults & their causes in knitting

i. **Hole**

Causes:

- Holes are the results of yarn breakage or yarn cracks.

- If the yarn count is not correct on regarding structure, gauge, course and density.

- Badly knot or splicing.

- Yarn feeder badly set.

- During loop formation the yarn breaks in the rejoin of the needle hook.

Solve:

➢ Yarn strength must be sufficient to withstand the stretch as well as uniform.

Knot should be given properly

iii. Needle Mark

Causes:

• When a needle breaks down then needle mark comes along the fabrics.

• If a needle or needle hook is slightly bends then needle mark comes on the fabrics.

Remedies:

➢ Needle should be straight as well as from broken latch.

iv. Sinker Mark

Causes:

• When sinker corrode due to abrasion then some times can not hold a new loop as a result sinker mark comes.

- If sinker head bend then sinker mark comes.

Remedies:

➢ Sinker should be changed.

v.   Star mark

Causes:

- Yarn tension variation during production.

- Buckling of the needle latch.

- Low G.S.M fabric production.

Remedies:

➢ Maintain same Yarn tension during production.

➢ Use good conditioned needles.

vi.   Drop Stitches

Causes:

- Defective needle.

- If yarn is not properly fed during loop formation i.e. not properly laid on to the needle hook.

- Take-down mechanism too loose. ©Daffodil International University

- Insufficient yarn tension.

- Badly set yarn feeder.

Remedies:

➢ Needle should be straight & well.

➢ Proper feeding of yarn during loop formation.

➢ Correct take up of the fabric & correct fabric tension.

➢ Yarn tension should be properly.

vii. Oil Stain

Causes:

- When oil lick through the needle trick then it pass on the fabrics and make a line.

Remedies:

➢ Ensure that oil does not pass on the fabrics.

➢ Well maintenance as well as proper oiling**.**

vii.   Rust Stain

Causes:

- If any rust on the machine parts.

Remedies:

- If any rust on the machine parts then clean it.

- Proper maintenance as well as proper oiling.

viii.   Pin Hole

Causes:

- Due to break down or bend of the latch, pin hole may come in the fabric.

Remedies:

➢ Change the needle

 ix.   Cloth Fall- Out

Causes:

- Cloth fall- out can occur after a drop stitch especially when an empty needle with an empty needle with closed latch runs into the yarn feeder and remove the yarn out of the hook of the following needles.

Remedies:

➢ Make sure all the latches of needle are closed with feeding yarn after a drop stitch.

 x.   Fly Dust

Causes:

- In knitting section too much lint is flying to and fro that are created from yarn due to low twist as well as yarn friction. This lint may adhere or attaches to the fabric surface tightly during knit fabric production.

Remedies:

➢ Blowing air for cleaning and different parts after a certain period of time.

➢ By cleaning the floor continuously.

➢ By using ducting system for cleaning too much lint in the floor.

➢ Over all ensure that lint does not attach to the fabric.

xi.   Yarn Contamination

Causes:

- If yarn contains foreign fiber then it remains in the fabric even after finishing,

- If lot, count mixing occurs.

Remedies:

➢ By avoiding lot, count mixing.

➢ Fault less spinning.

3.23 Maintenance

3.23.1 Maintenance of Machinery

Maintenance of machineries is very important for any type of industries and it is a must for a Factory. All machines and machines parts of knitting maintained with extreme care. Because production quality and quantity within expected date & time both depends on the maintenance with regularity. A.E Knit Wear Ltd . leads maintenance with a top of skilled mechanical fitters.

Two types of maintenance are carried out. They are -

> ➢ Break down maintenance
> ➢ Schedule maintenance

Break Down Maintenance:

This type of maintenance is carried out only when machine remains stop due to-

a. Break down for mechanical fault

b. Break down for design changing

Schedule Maintenance:

Every machine has a definite maintenance schedule which is performed after a certain periodic interval to ensure –

a. Smooth production process

b. Sound running of machine

c. Longer useful life of machine

d. Better quality of product

e. Lower rejection of machine parts

f. Lower load on operator

3.23.2 Function of Maintenance

a. Inspection:

Faulty parts are identified &their present condition is checked. And also availability of stand by equipments is also checked.

b. Lubrication:

Before starting maintenance all moving & frictional parts are lubricated so to facilitate &draw off the parts.

c. Record & analysis:

Previous records & history of the maintenance are checked and analyzed. Before maintenance the following records should be checked:

i. Operating manual of the m/c
ii. Maintenance manual
iii. History card
iv. Inspection card
v. Log book

d. Planning & scheduling:

Taking of proper plan & making of specific schedule how the maintenance should be performed properly.

e. Operation:

The maintenance operation is performed as stated below.

f. Replacement of faulty parts

The faulty parts which are identified, replaced by new parts.

g. Storage & record

The faulty parts which are rejected stored properly & keep top to bottom record of this operation.

3.23.3 Maintenance Procedure

a) For there is any mechanical fault of machine which is responsible for production hamper, operator informs mechanical fitters in duty. Mechanical fitters come and observe the problem firstly and then they begin to fix it.

b) If mechanical fitters be unable to fix it, then they inform technical in-charge, he then comes in spot and fix it.

c) For there is any electrical problem of machine or serious founding mechanical problem, mechanical and electrical department are informed, they come and fix the problem. They commence at work after informing of knitting manager. There are two mechanical engineers in the department.

d) For restorative maintenance, senior production officer orders mechanical fitters to fit required machine for cam and needle arrangement and other necessary requirements in case of new design development.

3.23.4 Maintenance sequence of circular knitting machine

Power on/off

↓

MPF/Positive feeder current line off

↓

MPF belt out/loss

↓

Yarn cut

↓

Fabric out by handle

↓

Cleaning and Oiling

↓

Cam box out

↓

Needle & sinker out

↓

Needle & sinker cleaning by oil

↓

Cam box cleaning by air

After opening & cleaning, m/c is leveled by using leveling meter and follows the reverse process to ready the m/c.

Figure (3.23.4): mechanical dept. maintains(servicing) m/c

3.23.5 Maintenance Tools & Their Functions

S L No.	Name of Tools	Functions of maintenance Tools
01.	L-Key	Loosen and Tighten the screws.
02.	Air Suctioned	Cleans machine by suctioning.
03.	Screw Driver	To loosen and tighten the screws.
04.	Dhal (Spanner)	Loosen and Tighten nut and bolt etc.
05.	Star Driver	Screw unlocking.
06.	Pliers (Nose &Coarse)	Tighten screws and nuts.
07.	Cutting Pliers	Cutting thin wire.
08.	Pulley Key	To loosen pulleys.
08.	Pulley Key	To loosen pulleys.

Figure (3.23.5): mechanical tools

3.24 Utility Service

Utility Facilities	Source
Electricity	Gas Generator & Diesel
Water	Pump
Air	Compressor

Electricity (Generator):

Total Generator: 02

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

        Gas Generator – WAVKESHA – Capacity –900 KW

Total Requirement: 1-1.5 MW/day (3500-4000 kAmp current)

Total Output of Three Gas generators – 2100-2500 kw

Pressure required for Gas generators – 222 kpa for 1100 kw & 145 kpa for 900 kw.

Line Pressure – 13 to max 145 kpa

Compressor:

Source: Natural Air
M/C Name: CECATTO (ITALY)
No of m/c : 01
Capacity: 17,0001/hr, 1000 1/hr.
Unloading pressure: 7.2 bar
Loading pressure: 5.6 bar
Chemical Used: Grease, Oil AMERIL

3.25 Inventory System

The main raw material of knitting is yarn, which is stored in two stages such as-

 a. Long time storage

b. Storage before production

Long time storage:

Amount of yarn which is required for the production of several months as prerequisite .This yarns are stored as production requirement in the bonded wire house.

Storage before production:

The amounts of yarn which are loaded in the store room concern with the production section for continuous speed of production from bonded ware house. Those yarn lots are selected to store which will be used for current production.

After knitting the fabrics are collected according to roll form. There is a big store room beside knitting section in this factory and fabric rolls are stored here according to fabric types and some specification is given to fabric rolls such as buyer name, yarn count, lot no, fabric type, m/c no, fabric weight etc. Collars and cuffs are also stored in this room. A store keeper always does this job successfully.

Chapter- Four

IMPACT
OF THE
INTERNSHIP

4   Impact of the Internship

- ➢ First, we have learned about different kinds of knit fabric.
- ➢ Experienced with different kinds of knitting machine and their brand.
- ➢ Knew about working procedure of knitting machine.
- ➢ Got an idea about various types of yarn.
- ➢ Got an idea about various types knitting elements during production.
- ➢ Learned how we can produce different value of GSM on fabric.
- ➢ Learned about different faults of knitting fabric.
- ➢ At last, experienced an official working environment of a knitting section.

Chapter- Five

CONCLUSION

5   Conclusion

Industrial training is an essential part for textile education because it minimizes the gap between theoretical and practical knowledge. Undoubtedly, this industrial training give me a lot about textile technology, production process, machineries, industrial management and made us comfortable with industrial life. Besides it give me the first opportunity to work in industry.

During our Eight weeks long industrial training at A.E Knit Wear Ltd, we got the impression that this factory is a modern knit industry. Though it was established 10 years ago, it has earned a very good reputation in market for its best quality product over many other export oriented textile mills. They are very much concerned about the quality of their product. We have also understood that A.E Knit Wear Ltd. cares a lot about then quality. If there was any problem it was quickly removed with the help of experienced and skilled production manager. Moreover they use good quality yarn, and in production. The administration, management and chain of command are well organized.