Faculty of Engineering

Department of Textile Engineering

Thesis Title

A study of knit faults and their inspection in weft knit fabric production.

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Advance in Fabric Manufacturing Technology

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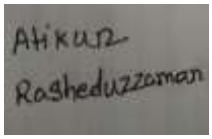
DECLARATION

We thus state that Mr. Asit Ghosh, Assistant Professor, Department of Textile Engineering, Daffodil International University, has been the report's primary supervisor. We further declare that no portion of this thesis report, including the entire study, has been submitted to another institution for a degree.



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Yours Sincerely

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LETTER OF APPROVAL

Hello, Sir

I'm just writing to let you know that the "minimization of knit faults in knit fabric production" task report that was created by Md Atikur Rahman and Md Rasheduzzaman, who both have IDs: of 193-23-756 and 193-23-749, is complete and ready for evaluation. A thorough examination at FABRICA KNIT COMPOSITE LTD and FAKHRUDDIN TEXTILE MILLS LTD. And ABONI TEXTILES LTD. was used to prepare the whole report. Additionally, incursion through the fundamental analysis of observational data with necessary possessions. The subject of the study was clearly related to their undertaking activities.

Therefore, it would be greatly appreciated if you would accept this project report and use it as the basis for your final assessment.

Yours Sincerely

Mr. Asit Ghosh

Assistant Professor

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ABSTRACT

On this examination, many types of single and double jersey machine faults were completed, and this article is focused on wastage and how this type of fault can be reduced. We also focused on several types of issues that the system faces while functioning. We have a problem. The main issue with these machines is waste. We have certain dyeing and finishing flaws that we have discovered and are working on developing. We plate how we can cut down on textural waste. Analyze the distinct type of existing procedure and the fault-creation technique. It was quite tough to identify those flaws and develop them in the same manner. However, in this experimental work, we know how to accomplish it and how to solve any problems that arise. For this investigation, we collected several samples of typical knit fabric flaws as well as some quality inspection sheets completed using the four-point system approach from two reputable textile industries. We first analyzed the data from the quality inspection sheet, and then we examined how changing the stitch length affects the increase or decrease of mainly occurring flaws on grey knit materials. We collect all fault sample from "FABRICA KNIT COMPOSITE LTD." "FAKHRUDDIN TEXTILE MILLS LTD,"

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Introduction

1.1 Introduction:

Bangladesh is one of the strongest knitwear producing countries in the world in terms of capacity and competitiveness. Therefore, this country is known for producing high-quality products at a low cost. Bangladesh has been a knitwear manufacturing paradise for all famous brands. There are approximately 4,560 garment factories in Bangladesh that export garments to the global market, of which approximately 2,500 are knitwear factories that produce large quantities of high-quality knitwear for well-known international brands. Currently, this country produces about 5 billion dollars of products annually through the export of clothing. Today, customers want to buy quality products. They are more aware of quality because they want to continue buying quality products. For the textile industry, it is a challenge to continuously produce high-quality fabrics to avoid fabric rejection. In order to increase the quality and efficiency, it is very important to detect defects in the production of tricot fabric in circular knitting machines. If changes are needed to be made in the organizational process, analysis is required. Quality can be improved according to industrial research.

1.2 Objective:

The main objective of this study is to investigate the different types of defects in knitted fabrics and to find a way to eliminate these defects for better quality and more quantity of fabrics. As the textile and clothing industry is the only source of growth, the rapidly developing economy of our country and the export of textiles and clothing is the main source of foreign exchange earnings. So, knowing about this section is our top priority and we should know everything about this section.

1. Find different types of defects and find their remedy.
2. Identify machine faults and their limitations.
3. Reduce the amount of waste in the knitting industry by evaluating errors.
4. To increase the percentage of fabric production by eliminating defects.

5. Minimize errors and have better production.

Chapter 2

Literature Review

2.1 knitting:

Knitting is one type of method by which yarn is processed into a textile or fabric. It is used to make many types of clothing. Knitting can be done by hand or by machine. Knitting creates stitches: loops of yarn in a row, either flat or circular. The word Knit is derived from knot, which is thought to come from the Dutch verb knutten, which is similar to Old English cnyttan, "knot". Knitting is the process of using two or more needles to loop yarn into a series of interconnected loops to create a finished garment or other type of fabric.

Knitting is primarily classified as –

- Warp knitting
- Weft knitting.

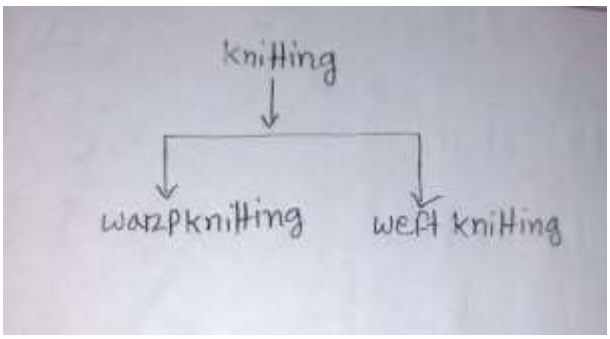


Figure 1: Knitting classification

2.1.1 Warp knitting:

Warp knitting is a group of knitting methods in which yarns are meandered along the length of the fabric; after adjacent columns or Wales knitting rather than after a single row or course. By comparison, knitting across the width of the fabric is called weft knitting.

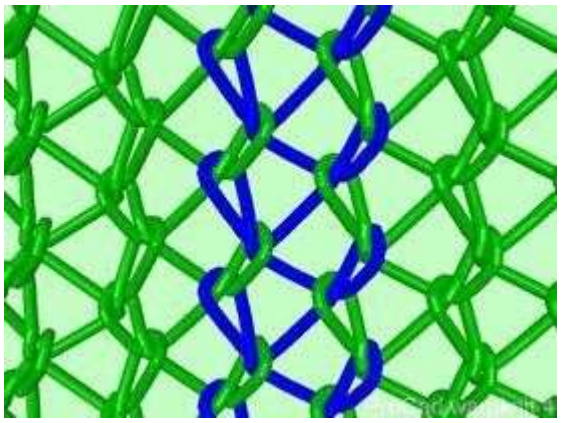


Figure 2: Warp

2.1.2 Weft Knitting:

Weft knitting is the easiest way to turn yarn into fabric. Weft knitting is a fabric forming method in which the loops are made in a horizontal fashion from a single yarn and the interweaving of the loops takes place in a circular or flat shape on a cross basis.

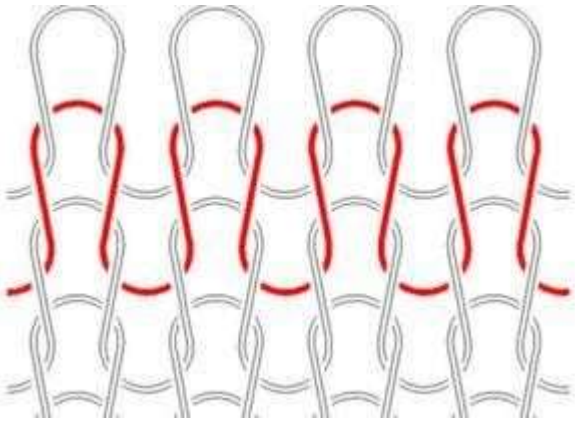


Figure 3: Warp

2.1.3Basic comparison between Warp and Weft Knitting:

Weft and warp are knitting terms that refer to the widths and lengths of the threads. The "warp" is the series of threads that run from front to back, and the "weft" is the series of threads that run through the warp in the pattern. The weft is the yarn that runs back and forth, while the warp is the one that runs up and down.

2.1.4 Weft Knitting Classification:

In weft knitting there are -

1. Circular knitting
2. Flat knitting

In circular knitting there are -

1. Single Jersey
2. Double jersey

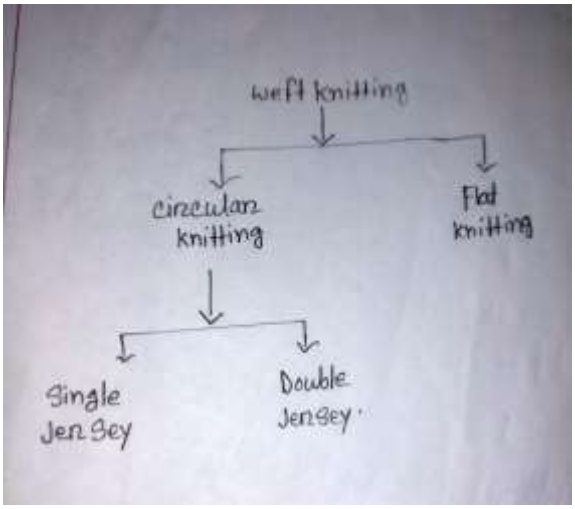


Figure 4: Weft Knitting Classification

2.2 Here are some common definitions that play a vital role in knitting-

2.2.1Gauge:

The gauge of the machine is the number of needles per inch and the construction of the fabric looks very masculine. Not all threads can be used on machines of the same size. Usually, as the gauge of the machine increases, the thread should be thinner.

2.2.2 Stitch Length:

The length of yarn required to make a complete knitted loop is called the stitch length. The stitch length is the length of yarn that includes the needle loop and half the platinum loop on each side of it. The GSM of the fabric may vary depending on the stitch length.

2.2.3GSM:

The full form of GSM is grams per square meter, the weight of a substance is known as GSM. In general, the higher the GSM of a fabric, the stronger and more durable it is likely to be.

Figure 5: GSM testing machine

2.2.4 WPI:

Wales per inch also known as WPI indicates the total number of posts in one inch of linear fabric. WPI is one of the important parameters for determining GSM fabric and other fabric properties.

Figure 6: Wales

2.2.5CPI:

Course Per Inch, which is also known as CPI, is a combination of horizontal courses direction with continuous knit yarn.

Figure 7: Course

2.2.6Yarn Count:

Yarn count is a numerical expression that expresses its fineness or coarseness. It also shows weather the yarn is thick or thin. In short, Count is a number that indicates weight per unit length or length per unit weight of the yarn.

2.2.7Dia:

The width of the fabric is known as the dia. In general, the diameter varies with the GSM of the fabric. Even with the GSM fabric diameter can be controlled. If Día goes up, GSM will be low and if Día decides, GSM will be high. The finishing diameter is very important for the fabric. There is machine diameter, gray fabric diameter and finishing diameter.

2.3Knitting Machine:

2.3.1Circular Knitting Machine:

Circular knitting machines are specialized machines used in the textile industry to create seamless tubular fabrics or garments. Unlike flat knitting machines, which produce flat panels that are later sewn together to create a garment, circular knitting machines produce fabrics in a continuous tube or cylinder shape. These machines are

highly efficient and are commonly used for making items such as socks, tights, leggings, hats, and various other tubular textiles.

Figure 8: S/Jersey Circular Knitting Machine

2.3.2Functions of Circular knitting Machine's Parts:

1. Yarn tensioner: It is used to ensure that the yarn is gripped by the needle.
2. Cam box: A cam box in a knitting machine contains pattern-generating cams that control needle movements, allowing for pattern variations and fabric designs by altering stitch formations during the knitting process.
3. Bobbin: The bobbin is used to place the cone of yarn. From there, the yarn is fed to the machine through a pipe.
4. Feeder: It is completely connected with fabric production. Fabric production will be higher if the number of feeders is higher.
5. Needle: The needle is the most important part of the knitting machine. A needle is used to knit the fabric. There are different types of needles such as latch

needle, bearded needle, compound needle, etc. Among these needles, the needle is widely used in knitting technology.

6. Base plate: The cylinder is located on the base plate.
7. Take-up roller: It is used to pick up the fabric from the knitting machine. The take-up roller also controls the exact tension of the fabric.
8. Yarn guide: The yarn guide is used to guide the yarn. During this, it is necessary to maintain the correct tension on the yarn.
9. Roller: The roller is one of the most important parts of the knitting machine where all the needles are set.
10. Auto Stopper: If the knitting machine is in fault, then the auto stopper will automatically stop the knitting machine.
11. VDQ pulley: VDQ stands for variable diameter for a quality pulley. Checks the fabric quality.
12. The VDQ roller is very important to maintain the correct stitch length.
13. Body: The body of the machine is the total area of the knitting machine that it has.
14. Sinker: While making a loop, sinker is used to hold and support the thread.
15. Indicator: Identifies yarn breakage. When any yarn breaks, a light will light up to show which yarn has broken.

2.4Different Types of Fabric:

Among so many fabrics there are some common fabrics which are discussed below:

2.4.1Single Jersey:

A single thickness of knit fabric made from a fine yarn. It is usually made using a stocking stitch, but can also be made using a rib stitch or other designs that are braided. Interlock/double jersey: Two layers of jersey fabric are knitted together with the wrong sides folded together.

Figure9: Single Jersey

2.4.2Rib:

The texture of the rib is a fabric with vertical ribs clearly visible on the front and back sides. In other words, the ribbing of a double-sided fabric is reversible. Rib knits are commonly used to create bands such as t-shirt collars, turtlenecks, hems, and

Figure 10: Rib

2.4.3Interlock:

Interlock fabrics are a type of rib knit structure. It is similar to knitwear, but the front and back of the fabric are similar. It has a double construction, so it is a thick knit fabric. Read more » The fabric is extremely soft, firm and absorbent.

Figure 11: Interlock

2.4.4Terry fabric:

Tar pile or double-sided woven material used for towels, beach wear, bath, etc.

Figure 12: Terry

2.4.5 Fleece:

Fleece is a soft fabric with a brushed surface that has excellent insulating properties. It retains body heat well, making it ideal for cold weather. It's a warm fabric that comes in a range of materials. Although the fabric is named after a sheep's fleece coat, it is not entirely natural. Most fleece fabrics available today are made from polyester fibers, but

they can also be made from cotton, hemp, and rayon fibers. This fabric is a breathable, inexpensive substitute for wool that ages well and does not fray easily.

Figure 13: Fleece

2.4.6Pique:

Lacoste, also known as pique, is a durable cotton fabric covered in small textured patterns. The crisscross knit structure creates a cellular effect with a unique and delicate texture. The term pique is also used for woven fabrics with small woven designs that resemble quilts.

Figure 14: Pique

2.4.7Pointel:

Pointel is a knitted fabric with a hole or opening pattern created using transfer stitching. Pointer knits use stitches in the weave to create small open patterns, usually in geometric shapes. It adds a light and delicate texture to the dress.

Figure 15: Pointelle

2.5 Fabric faults and Remedies:

2.5.1 Needle Lines:

Causes:

- Bent latches, needle Hooks & needle stems.
- Tighter needles in the grooves.
- Wrong needle selection.

Remedies:

- Inspected the Needle filling sequence in the Cylinder Dial grooves.
- Identify the grey fabric on the knitting machine for any Needle lines.
- Eliminate the fibers accumulated in, the Needle tricks.
- Replace any bent Needles, running tight in the tricks.
- Replace all the diplomatic needles having, bent latches, hooks or stems.

2.5.2 Sinker Lines:

Causes:

- Bent or worn sink.
- Sink ring groove where the sink is firmly inserted.

Remedies:

- Removes fibers that block the sinker trick.
- Replace any worn or bent sinkers that cause indentation lines in the fabric.
- Sink lines appearing on fabric are very common and vertical lines are weak.

2.5.3 Oil line:

causes:

- Excessive oiling of needle beds.
- Threads and pad assembled in needle traps which remain sprinkled with oil.

Remedies:

- After cleaning, use the grooves of the cylinder, dial and immersion ring with dry air.
- Dispose of all machine needles and weights regularly.
- Thoroughly wipe the cylinder grooves and machine discs with gasoline.
- The fibers collected in the needle trikes cause the oil to seep into the fabric.
- Some lubricating oils are not washable and cannot be removed during washing.

2.5.4 Yarn Contra:

causes:

- Foreign material is present in short fibers.
- If dead fibers or other foreign bodies appear (dyed fibers, husks, synthetic fibers, etc.).
- Dead fibers are not dyed during dyeing.
- The presence of excess unripe cotton fibers leads to the appearance of dead fibers in the fabric.
- Dyed fibers and other types of fibers from nearby looms are attached to the threads used in weaving and embedded in the gray fabric.

Remedies:

- A method of precise control of the blowing room to prevent foreign substances from entering the cotton.
- Separate spinning and weaving machines with vinyl curtains or mosquito netting to prevent fibers from adjacent machines from becoming entangled in yarn or fabric.
- To reduce the number of dead fibers in the fabric, a rich combination of fibers is used in the yarn used for weaving.

2.5.5 Holes:

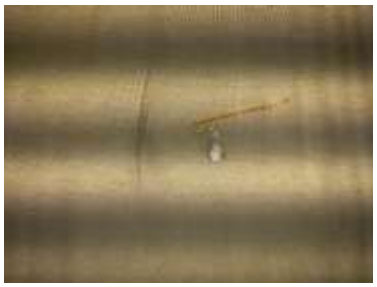


Figure 16: Holes

causes:

- The distance between the dial ring and the cylinder ring is incorrect.

- Great thread tension.
- Too much or too little yarn feed.
- High fabric removal tension.
- Obstruction of thread passage due to wax blocking of eyelets, thread guides and tension discs.

Remedies:

- Use a tension meter to ensure that the thread tension is uniform across all feeders.
- The thread feed speed should be strictly adjusted according to the stitch length required.
- Avoid getting fibers, lint, wax or other materials caught in the eyelets or thread guides.
- Change the distance between the cylinder and the plate depending on the stitch size.
- The selected thread should be free of defects such as mud, naps and big knots.

2.5.6 Lycra Turn:

causes:

- When the Lycra wheel moves lower than its actual movement, the lycra goes into the fabric
- unevenly and a spot appears on the fabric.

Remedies:

- The movement of the Lycra wheel must be precise.
- Wheel speed must be maintained.

2.5.7 Stop Mark:

causes:

- When the machine is switched off for a long period of time between productions, it will cause smudges on the fabrics with dust, which will appear as a stop.

Remedies:

- The time needs to be shortened if a break is needed when the production is on.

2.5.8 Flying Dust-

Figure 17: Fly dust

causes:

- If the surfaces of the device are not properly cleaned, dust flying problems occur.

Remedies:

- Before starting to prepare the dough, you must clean the machine thoroughly.
- The device should be filled with air for several hours.

2.5.9 Set Off:

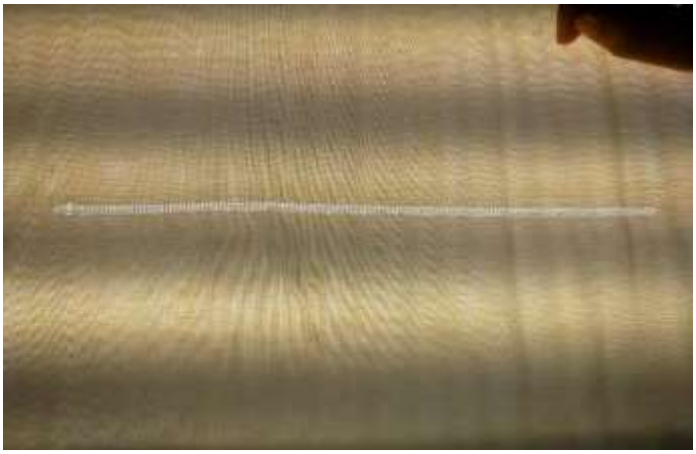


Figure: 18: Set Off

causes:

- When Lycra fabric is made, if the cotton slows down but the Lycra remains it is known as rebound.

Remedies:

- The machine operator can play a vital role in eliminating this problem, he must be careful when the fabric is running in the machine.

2.5.10 Patta:

causes:

- When other threads enter the fabric, thin lines appear on the fabric. This problem occurs when there is a third thread.

Remedies:

- When running the fabric, great care should be taken so that the threads of other lots do not enter the fabric.

2.5.11Thick and Thin:

causes:

- This problem is mainly caused by threads. This problem occurs when the yarn quality is not as tough as the fabric structure.

Remedies:

- You need good quality yarn. This problem occurs mostly with white fabrics, so to solve this problem, you should use high-quality branded yarns.

Chapter 3

METHODOLOGY

3.1 Materials & Methods:

In knitted fabrics, defects are identified for each fabric roll. It is similar to creating a fabric defect inspection report. A report is created for each type of defect created to objectively assess the quality of the roll of knitted fabrics. Basically, the inspection only evaluates the quantity and type of defects to determine the quality of the fabric, but the size of the defects is the most important and important. In the fabric roll, the length of the break and the frequency of the break were measured and included in the fabric break inspection report. Defects in knitted fabrics can occur in several basic ways. Problems may occur during flat knitting. Something like pollution and spiral or nudity. Vertical lines such as hole lines and sink lines may appear during weaving. Malfunctions such as broken needles and falling stitches can also be caused by machines. As I researched the Kent Concern Group, I found that they have a wide variety of fabric types and variations. They produce a large number of garments using every type of fabric possible. Some of the export fabrics we found are: singles, Lacoste, heavy jersey, terry, fleece, ribbed, twill, puck, ottoman, twill, muslin, quilting and many more. There are all kinds of patterned fabrics. Among all these fabrics, we have selected and reviewed the most common fabrics such as single jersey, ribbed, terry, wool and Lacoste.

Below are the specifications of those fabrics.

3.1.1Single jersey specifications:

A single jersey fabric that is often used for t-shirts. It is generally made of cotton or polyester yarn.

Basic GSM for single jersey fabric is 160.

- Fabric Type: Single jersey
- Machine: Single Jersey
- Gauge: 28,30
- Yarn:16s,20s, 24s,26s, 30s,34s,36s,40s
- GSM: 150,160,170
- Feeder: 108

3.1.2 Terry Specification:

Terry material is often used for winter clothes. It is usually made of cotton or polyester or viscose.

Basic GSM for jersey fabric is 260-320. This fabric can be 2 or 3 threads.

- Fabric Type: Terry
- Machine: Fleece
- Gauge: 20
- Yarn: 34s + 75D + 16s, 30 + 75D + 14s, 34s + 34s + 12s.
- GSM: 280,290,300
- Feeder: 68

3.1.3 Rib Specification:

Rib fabric is mainly used for parts such as cuffs, collar, hem and neck bend, and it is also used as body fabric. There are 1x1, 2x1 and 2x2 gears. There are many more types including irregular fabrics. The GSM of the ribbed fabric base is 145-350.

- Fabric Type: Rib
- Machine: Rib/ Interlock
- Gauge: 18,20,24
- Yarn: 24s,26s,28s,30s,34s,
- GSM:260.
- Feeder: 72

3.1.4 Fleece Specification:

Fleece and terry are similar. The industry we worked in kind of specifies them. If the terry fabric has a brushing process, it is called fleece. Fleece fabric is most often usedfor winter clothes such as tights, sweatshirts, sweatpants and other heavy fabrics. It is usually made of cotton or polyester, also viscose. The basic GSM of single jersey fabric is 280 – 390. This fabric can also be double or triple.

- Fabric Type: Fleece
- Machine: Fleece
- Gauge: 20
- Yarn: 30s + 75D + 16s, 34s + 75D + 14s, 34s + 34s + 12s.
- GSM: 260
- Feeder: 68.

3.1.5 Interlock Specification:

Interwoven and ribbed fabrics look the same. However, there are slight design differences between the two fabrics. Interlock fabric is used for the body fabric. The basic GSM of the ribbed fabric is 200-300.

- Fabric Type: Strip Interlock
- Machine: Rib/ Interlock
- Gauge: 24.
- Yarn: 28s, 30s, 34s, 40s.
- GSM: 300.
- Feeder: 72

3.2 Working Procedure:

3.2.1 Inspection:

An important process to maintain the quality of the raw materials used in making the final product is called inspection. One person is responsible for making sure that this inspection is done. They are a quality control team.

3.2.2 Method:

- After the fabric is produced, the fabric goes to our quality control team for inspection.
- They take the roll to the fabric inspection machine. Then check the entire fabric and mark any flaws.
- Write down the name of the fabric defect, its size and amount in the fabric inspection report for the day.
- Then send the fabric roll to the gray fabric store and enter the fabric details as the challan number.

Figure 19: Fabric Inspection Machine

3.2.3 Inspection quantity:

- A 4-point system with a fabric testing device should be used with at least 10% fabric testing.

- The speed of the machine should be checked by the auditor based on the type of fabric.

- After testing the fabric, we have to check it again and this time we have to check and cover 30 fabrics.
- If there is a buyer's requirement, the fabric should be inspected. The length of the fabric is checked between 10 and 15 meters per minute depending on the type of fabric.
- It may take up to 7 days for the fabric to be checked in the Four Points system after receipt from the supplier.

3.2.4 Name of major defects and founded size:

➢ Needle Mark: 3"-5"

➢ Sinker Mark: 2"-5.5"

➢ Patta: 3.5"-9.5"

➢ Lycra Drop: 1-2.5"

➢ Oil Line: 1.5"-4"

➢ Hole: 0.5"-3."

➢ Yarn contra: 0.2"- 0.5"

➢ Thick Thin: 3.5"-9"

If any of the above defects are found in knitted fabrics, it is known as serious fabric defects. Not all of these defects are visible and some must be identified on the fabric inspection table.

3.2.5 Given Penalty points based on 4 Four Points system:

Size of Defect:	Penalty point
3 inch or less	1
Over 3 inches but less 6	2
Over 6 inches but less 9	3
Over 9 inches	4
Any hole	4

The quality of the fabric is determined based on predetermined points, which are also called penalty points. If you get more than 4 points, no fabric will be awarded. This fabric is not allowed in the following processes:

3.2.6 Given Penalty Points Calculation:

$$\frac{\text{Total point x 36 x100}}{\text{Fabric length yds x Fabric width inch}}$$

Chapter 4
RESULT AND DISCUSSION

4.1 Fabric Faults Inspection Table:

4.1.1 Table: Strip Single Jersey (33 Yds, 166 GSM)


Fabrica Knit Composite Ltd.
4 POINTS SYSTEM GREY FABRIC INSPECTION REPORT

Name of faults	Number of defects	Penalty Point
Fly contra	2	2x1=2
Yarn contra	1	1x1=1
Oil stain	1	1x1=1
Slubs	1	1x1=1
Loop set-up	8	8x1=8
		Total penalty point =13

4point calculation:

Total penalty point :13

Fabric length yds:33

Fabric width inch:94

Points per 100 yards:

So. $$\frac{\text{Total point x 36 x100}}{\text{Fabric length yds x Fabric width inch}}$$

$$\frac{13 \text{ x36 x100}}{33 \text{ x94}}$$

=15

This fabric is A grade.

Discussion:

In order to minimize defects in fabric production, it is important to find and fix their causes. For example, in single jersey lycra set-up are one of the common defects. The cause is excessive stress. If you follow the instructions, you can use Lycra set-up with just the right amount of stretch without it tearing. For all defects, we use solutions to minimize defects from fabric production.

4.1.2Table: Rib (84 Yds, 175 GSM)

Fabrica Knit Composite Ltd.

4 POINTS SYSTEM GREY FABRIC INSPECTION REPORT

Name of faults	Number of defects	Penalty Point
Hole	4	4x4=16
Fly contra	1	1x1=1
Yarn contra	1	1x1=1
Oil stain	1	1x1=1
Slubs	1	1x1=1
		Total penalty point =20

4point calculation:

Total point :20

Fabric length yds:84

Fabric width inch:35

Points per 100 yards:

$$\text{So.} \quad \frac{\text{Total point x 36 x100}}{\text{Fabric length yds x fabric width inch}}$$

$$\frac{20 \text{ x36 x100}}{84 \text{ x35}}$$

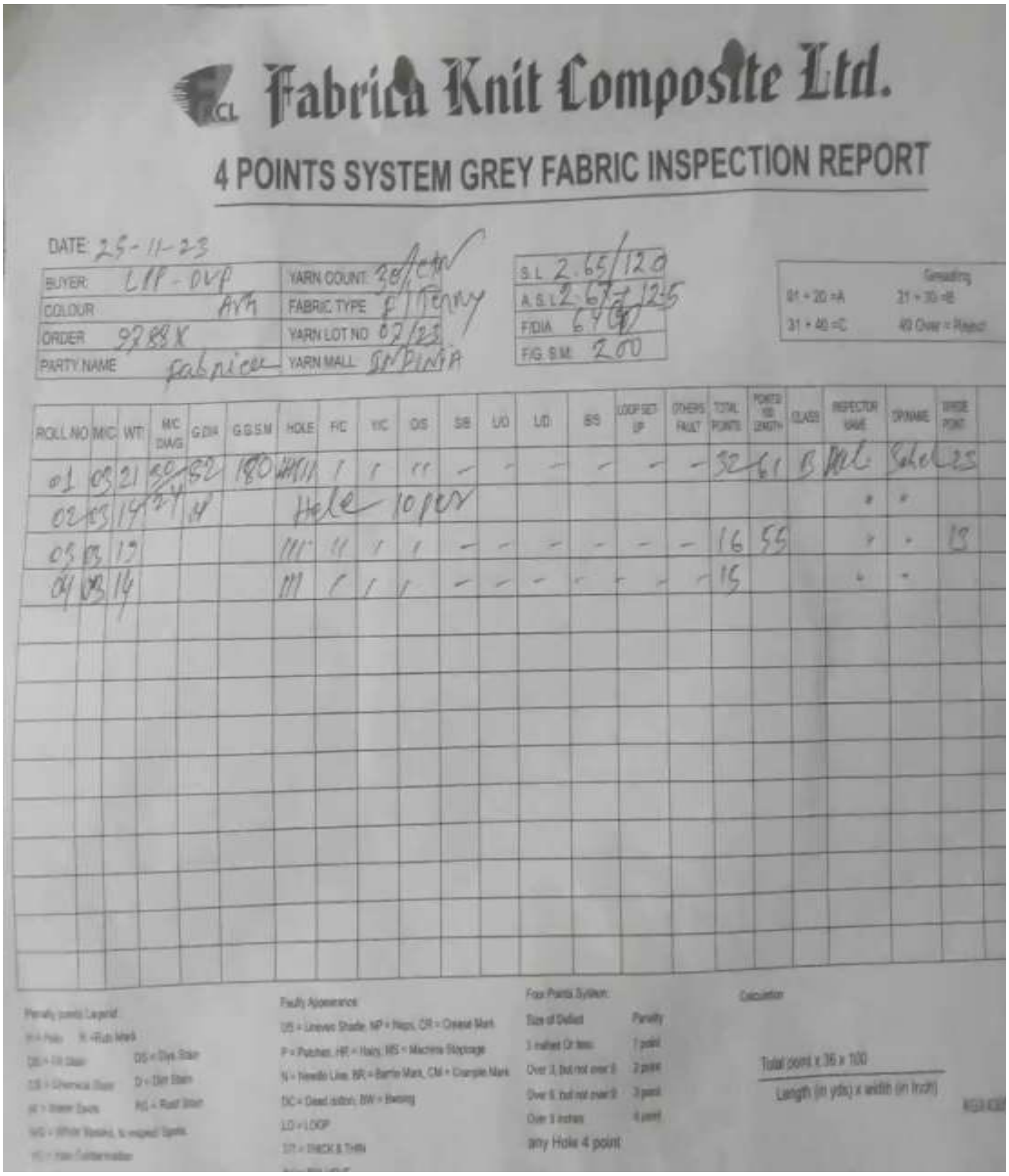
=12

This fabric is A grade.

Discussion:

Rib fabric structure is more difficult than single jersey. But here fault is continuously producing. However, the use of a krill box and the use of air purification methods minimize the problem and cause less waste in volume.

4.1.3 Table: Terry (55 Yds, 180 GSM)



Fabrica Knit Composite Ltd.

4 POINTS SYSTEM GREY FABRIC INSPECTION REPORT

DATE: 25-11-23

BUYER: LPP - OVP	YARN COUNT: 30/1 Carded	S.L 2.65/120	Grading: 01 ~ 20 = A; 21 ~ 30 = B
COLOUR: AVM	FABRIC TYPE: F/Terry	A.S.L 2.67/125	31 ~ 40 = C; 40 Over = Reject
ORDER: 9788X	YARN LOT NO: 07/23	F/DIA 64 Open	
PARTY NAME: Fabrica	YARN MALL: [illegible]	F/G.S.M 200	

ROLL NO	M/C	WT	M/C DIA/G	G.DIA	G.G.S.M	HOLE	F/C	Y/C	O/S	S/B	L/O	L/D	B/S	LOOP SET UP	OTHERS FAULT	TOTAL POINTS	POINTS 100 LENGTH	CLASS	INSPECTOR NAME	OP.NAME	SHADE POINT
01	03	21	30/24	82	180	IIIII	I	I	II	–	–	–	–	–	–	32	61	B	[illegible]	Sohel	25
02	03	19	"	"		Hole 10 per													"	"	
03	03	19				III	II	I	I	–	–	–	–	–	–	16	55		"	"	13
04	03	14				III	I	I	I	–	–	–	–	–	–	15			"	"	

Four Points System:

Size of Defect	Penalty
3 inches Or less	1 point
Over 3, but not over 6	2 point
Over 6, but not over 9	3 point
Over 9 inches	4 point

any Hole 4 point

Calculation:

Total point x 36 x 100 / Length (in yds) x width (in inch)

Name of faults	Number of Faults	Penalty Point
Hole	3	3x4=12
Fly contra	2	2x1=2
Yarn contra	1	1x1=1
Oil stain	1	1x1=1
		Total penalty point =16

4point calculation:

Total point :16

Fabric length yds:55

Fabric width inch:83

Points per 100 yards:

So. $$\frac{\text{Total point x 36 x100}}{\text{Fabric length yds x fabric width inch}}$$

$$\frac{16 \text{ x36 x100}}{55 \text{ x82}}$$

=13

This fabric is A grade.

Discussion:

Terry have also critical structure than plain single jersey. But here we can see faults are also produced in there. But here the bullet point is normally terry fabric fault number is 13.

4.1.4 Table: Double pique (76 Yds, 141 GSM)

Fabrica Knit Composite Ltd.

4 POINTS SYSTEM GREY FABRIC INSPECTION REPORT

Name of faults	Number of Faults	Penalty Point
Fly contra	2	2x1=2
Oil stain	1	1x1=1
Loop set-up	8	8x1=8
		Total penalty point =11

4point calculation:

Total point :11

Fabric length yds:76

Fabric width inch:80

Points per 100 yards:

$$\text{So.} \quad \frac{\text{Total point x 36 x100}}{\text{Fabric length yds x fabric width inch}}$$

$$\frac{11 \text{ x36 x100}}{76 \text{ x80}}$$

=7

This fabric is A grade.

Discussion: When conducting a double piqué fabric inspection, focus on the intricate details of the fabric, such as the precision of the piqué pattern, uniformity in weave, and overall quality. If the fabric meets high standards in texture, consistency, and appearance, it enhances its appeal and market value. A well-inspected and quality double piqué fabric reflects positively on the manufacturing process and contributes to its reputation in the textile industry.

4.2 Process of minimizing Fault during production:

Defect number or Quality of the product is depending up to the condition of machine and parts and quality of raw material. We can minimize fault number by following steps:

- Inspected the Needle filling sequence in the Cylinder Dial grooves.
- Replace any bent Needles, running tight in the tricks.
- Replace any worn or bent sinkers that cause indentation lines in the fabric.
- Use a tension meter to ensure that the thread tension is uniform across all feeders.
- Machine operator must be careful when the fabric is running in the machine.
- Use good quality yarn.

If we follow these instructions then we can able to make defect free fabric.

Chapter 5

CONCLUSION

There are various reasons for defects/defects in fabrics due to raw materials, spinning process, weaving, weaving and dyeing. Fabric defects are the main source of defects in the clothing industry. Today, the demand for high quality is even greater, because the increase in demand for high-quality fabrics has made customers more aware of issues other than quality. In this project, we have shown the main obstacles of fabrics and research on them. It also assesses the causes and finds solutions to remove those obstacles. As a result, our work contains relevant information and facilitates the identification of knitting defects. Fabric defects directly affect the company's profit margin. Because defective fabrics should be sold at a lower price in order to minimize the loss of value due to various defects occurring in the fabric, the manufacturer should try to minimize these defects by using the appropriate solutions available in this project. Consequently, our work could potentially benefit from an external influence framework thanks to similar conducted studies.

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