Faculty of Engineering

Department of Textile Engineering

Thesis Report On

"Identification of Different Types of Sewing Faults and their Remedies in Knit Garment Production"

Course Title: Project (Thesis)
Course Code: TE-4214

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This Report Submitted in partial fulfillment of the requirements for the degree of Bachelor of Science in Textile Engineering.

Advance in Apparel Manufacturing Technology.

Duration: April, 2018

Faculty of Engineering

Department of Textile Engineering

Approval Sheet

This research entitled **"Identification of different types of sewing faults and their remedies in knit garments production'' at Daffodil International University, April 2018**'' prepared and submitted by **A B M Sharifuzzaman (ID: 131-23-3387) & Md. Meherajul Islam (ID: 141-23-3817)** in partial fulfillment of the requirement for the degree of BACHELOR OF SCIENCE IN TEXTILE ENGINEERING has been examined and hereby recommended for approval and acceptance.

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Declaration

We attest that this report is totally our own work, except where we have given fully documented references to the work of others and that the materials contained in this report have not previously been submitted for assessment in any formal course of study. If we do anything, which is going to breach the first declaration, the examiner/supervisor has the right to cancel my report at any point of time.

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Acknowledgement

At the beginning, we would like to thank the Almighty **ALLAH** for giving us the ability to complete this report. Then we would like to take the opportunity to express us gratitude to our honorable supervisor **Mr**. **Md. Abdullah Al Mamun,** Assistant Professor, **Department of Textile, Daffodil International University** for providing us with guidelines and suggestions to complete this Project. His thoughtful advice assistance logical direction & efforts have made it possible to implement the project faithfully.

Our grateful thanks also go to **Professor Dr. Mahbubul Haque, Head of the Department of Textile Engineering,** for his support and continious guidance throughout our long journey in Daffodil International University and the industrial training. Special thanks goes to **Mr. Anayet Uddin, Executive Director, Suprov Composite Knit Ltd.;** and Also Thanks to **Mr. Md. Rafiqul Islam, Director, AmanTex Ltd.** who arrange the Permission letter for doing the project work in that Industry & variable advice to carry out the project work.

Dedication

Dedicated to the garments worker, who works morning to night, contribute running the wheel of country economy by hard work. Thank you so much, go forward, we are with you.

Abstract

Sewing process is one of the most important stages in garments production. During production in sewing process can be create some faults or defects, that can be causes low quality of the garments item. Some faults are recoverable and some cannot recoverable. Sewing faults can be causes of lower price of products, which not economical friendly for the garments industries. We investigated and observe two knit garment industries few days for sewing faults, which are commonly occurring during production operation process by worker. In our investigation we found some faults like broken stitch 8.91%, Skip stitch 16.80%, Open seam 15.78% and other sewing faults at Suprov Composite Knit Ltd. And similarly when we observed at Aman Tex Ltd. we found broken stitch 4.81%, Join stitch 4.39%, Uncut thread 20.33%, Up-down 17.31%, Rag edge 7.28% and others. Finally we found total 6.38% garments are defective causes of sewing problem for a single calculation for two industries. The main aim of this study is to investigate whether the knitwear production process is under control in a knitwear production enterprise and to detect the process with highest rate of sewing faults in sewing process and finally to make suggestion for improving the quality control.

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Chapter: 1

Introduction

1.1 Background of the study:

The readymade garment is totally incomplete without sewing process. But sometimes there are different difficulties and the result is sewing defects. It is because of lack of proper skill, machine disturbance and improper machine adjustment. Due to these obscurities fault occurred and effects quality, productivity, expense and also efficiency. So Quality standards are part of a firm standard operating procedure, product development and production planning. Standards reflect the overall intrinsic quality level the firm seeks to achieve. The fundamental purpose of using quality standard is to provide consistency between products and products line. Because of maintaining standard or quality of product it is mandatory to detect the fault and find out the best solution to diminish the error. Among the process control list, product control chart were used in the study.

Rapid detection of a sewing defect is significant to optimization of the relationship between quality and productivity. Defects found after sewing negatively affect costs of the product. There is different plus to identifying an imperfection before other operations hinder seam removal and re sewing. This observation is based upon the current system in which the operator serves as the first line of quality control implementation. And other sewing stations have no operator to serve in the first line quality control position. Then finally assessment procedure of defect was done and find out the best suggestion.

1.2 Objectives of the Study:

This project paper defines frequently occurs the sewing defects and way to prevent breakage thread.

- To know about proper quality management system.
- To create new method of quality control.
- To know about defects of garments.
- Technical solution for remove or reducing defect.
- To know causes of thread defects and its remedies.
- To implement technical solution toward thread defects.
- To prepare a guideline which will assists the technical person in the relevant field.
- To show how technical know-how can increase production efficiency.

1.3 Important and Scope of the study:

- To analyze the types of faults in sewing section.
- To play an important role in increase or decrease production.
- To easily calculate per hour faults in a line.
- To reduce sewing fault during production.
- It gives knowledge why sewing fault increase or decrease.
- Avoid defects on garments and save time.

1.4 Limitations of the study:

- Limitation of time to research this topic.
- Limitation of primary data sources.
- Limitation of accurate data.
- Input and output problem.
- Respondent unwillingness.
- Changing the style and arrangement.

Chapter: 2

Literature Survey

2.1 Sewing:

The basic process of sewing involves fastening of fabrics, leather, furs or similar other flexible materials with the help of needle and threads. Sewing is mainly used to manufacture clothing and home furnishings. In fact, sewing is one of the important processes in apparel making. Most of such industrial sewing is done by industrial sewing machines. The cut pieces of a garment are generally tacked, or temporarily stitched at the initial stage. The complex parts of the machine then pierces thread through the layers of the cloth and interlocks the thread.

Figure 2.1: Sewing

2.2 Sewing Machine:

A sewing machine is a mechanical or electromechanical device equipped with a needle (or needles) threaded at the point-end, which puncture the fabric periodically as it moves under the needle. Each stitch is created as the thread loops onto itself (chain stitch) or locks around a second strand of thread (lock stitch), sewing the fabrics together.

Sewing machines are used in both the home and industry, but are designed differently for each setting. Those for the home tend to be more versatile in terms of the number and kinds of stitches they can perform, but they operate more slowly than industrial machines, and have a shorter life span. Industrial machines are heavier, have a much longer life span, are capable of thousands of stitches per inch, and may be designed for very specialized tasks.

Figure 2.2: Sewing Machine

2.3 History of Sewing Machine:

Sewing is considered an art for over 20.000 years, the first needles being invented in the XIV century, and later on in 1790 sewing by hand was replaced by the sewing machines. The sewing machine is a complex device which assemblies two or more pieces of fabric together by sewing them and is usually used in clothing manufacturing.

British Thomas Saint was the inventor of the concept of a sewing machine, but it is not sure if he was also the one who designed the first prototype of the sewing machine. His work seemed to be just an attempt of creating it, but never managed to do so.

The first working sewing machine was created by the French tailor Barthelemy Thimonnier, but the result didn't bring fame to him because of a group of tailors who burnt down the factory. Their belief was that the sewing machine will leave them jobless and they won't have any more orders coming in at their tailor shops.

In 1834, Walter Hunt created the first American sewing machine, but he also didn't have any success because of the preconceived idea that machines cause unemployment in wholesale clothing production.

The first truly successful sewing machine was brought into attention in 1850, when Isaac Singer found an old sewing machine and rehabilitated it in only 11 days, making it the first commercially acknowledged sewing machine. Singer's machine was different from the other ones because he replaced the wheel and pedestal with a pedal.

Starting with 1858, the Singer brand sold 3.000 pieces annually, and in 1863 the sales went over 20.000 units. The year 1873 marks the first production line in Canada and in 1889 their sales went up to 500.000 units, 23 years later, in 1903 they were recording sales of 1.305.000 units per year.
Today, different brand sewing machines are available in market and they develop this machine day by day.

2.4 Types of Sewing Machine:

In accordance with operating system there are two types of sewing machines are available in the apparel industry. They are given below:

A. Manually operated sewing m/c
B. Electrically operated sewing m/c

Various types of Industrial sewing machines named are given below

1. Bar tack sewing m/c (with automatic thread trimmer)
2. Bias tape cutting m/c
3. Blind stitch sewing machine
4. Button attaching machine
5. Button covering stitch belt loop making m/c (Kansai m/c)
6. Button hole m/c (for woven fabric)
7. Button hole sewing m/c (for knit fabric)
8. Chain stitch sewing machine

9. Collar and cuff turning and blocking machine
10. Double chain stitch m/c (double needle with reserve feed)
11. Double chain stitch sewing m/c (4- needle elastic inserting m/c)
12. Double chain stitch sewing machine (4- needle short)
13. Feed of the arm (double chain stitch m/c, 3-needle)
14. Hemstitch machine for pant
15. Interlock m/c (twin needle, 5-thread over lock m/c)
16. Label/elastic inserting machine
17. Lap seaming m/c (for back tape attaching)
18. Linking machine
19. Lock stitch m/c (1-niddle with vertical trimmer wiper & reverse feed)
20. Lock stitch m/c (2-needle with spilt needle bar sewing)
21. Lock stitch m/c (single needle sewing m/c)
22. Lock stitch m/c (single needle with automatic thread trimmer)
23. Lock stitch m/c (twin needle feed)
24. Lock stitch or plain stitch sewing machine (single needle with variable top feed with automatic thread trimmer)
25. Over edging machine
26. Over lock m/c (1-needle, 3-thread)
27. Over lock/Over edge sewing m/c (twin needle, 4-thread m/c)
28. Pin tucking machine
29. QQ loop making m/c
30. Shoulder pad-attaching machine
31. Automatic multi-needle shirring machine
32. Top & bottom cover stitch flat lock machine (cylinder bed and flat bed)
33. Top and bottom cover stitch flat bed m/c (3-needle)
34. Zigzag lock stitch sewing machine (1-needle)

Figure 2.3: Plain Sewing m/c

Figure 2.4: Over Lock Sewing m/c

Figure 2.5: Flat Lock Sewing m/c

Figure 2.6: Button Hole m/c

2.5 Different Parts of Sewing Machine

There are two major parts of the sewing machine. One is upper part and other is lower parts.

2.5.1Upper part of sewing machine:

Upper part of sewing machine carrying the parts given bellows according alphabetically

- Arm
- Balance Wheel/Hand Wheel
- Bed
- Bobbin
- Bobbin Case
- Bobbin Cover
- Bobbin Winder
- Face Plate

- Feed Dogs
- Head
- Needle
- Needle bar
- Needle Clamp
- Pattern/Stitch selector
- Presser Foot
- Presser Foot Lever
- Reverse Lever
- Slide Plate
- Spool Pin
- Spool pin for bobbin winding
- Stitch regulator
- Take up Lever
- Tension Disc
- Thread Cutter
- Thread Guide
- Throat Plate or Needle Plate

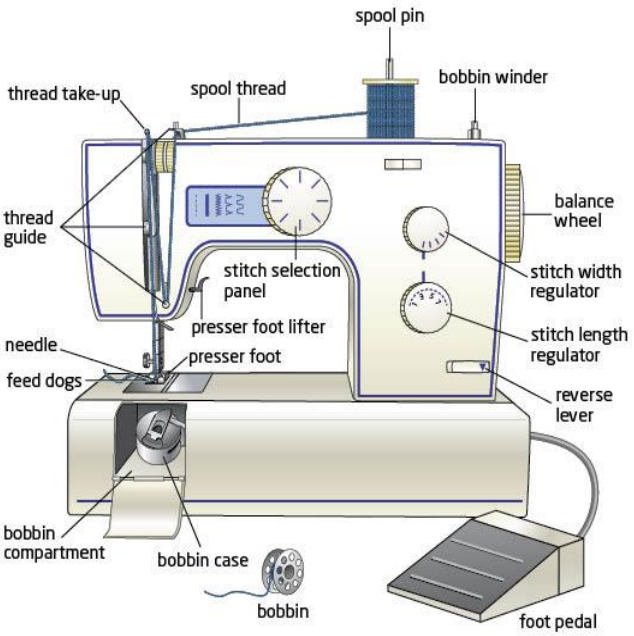


Figure 2.7: Different Parts of Sewing m/c (Upper Part)

2.5.2 Lower part of Sewing Machine:

Lower parts of sewing machine are point out below with alphabetically

- Band Wheel
- Band Wheel Crank
- Pitman Rod
- Belt Guide
- Belt Shifter
- Dress Guard
- Treadle or Foot Pedal
- Legs

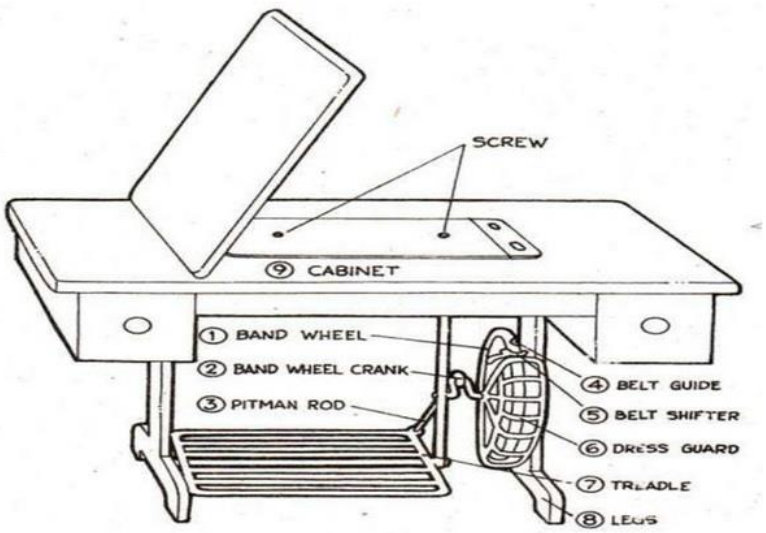


Figure 2.8: Different Parts of Sewing m/c (Lower Part)

2.5.3 Main Sewing Parts of Sewing Machine & Their Function:

1. Throat plate or feed plate
2. Feed dog
3. Presser foot
4. Needle

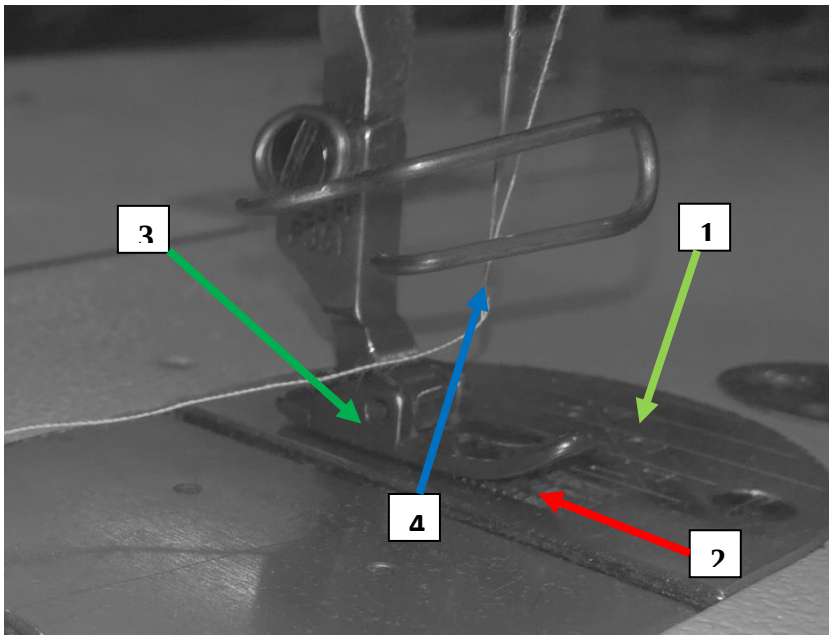


Figure 2.9: Main Sewing Parts

2.5.4 Throat Plate:

The part of the bed of the sewing machine which has openings for the needle and for feed dog penetrations and which provides localized support to the material. The openings vary in size and shape, depending on the sewing requirements. This is made of steel and its surface is very smooth. Due to the smooth surface fabric can be feed easily. It is also called needle plate. It has one or more slots through which feed dog can move forward and backward. It has a hole through which needle can move up & down with the thread. Size of this hole is not exceeding more than 30% of needle size.

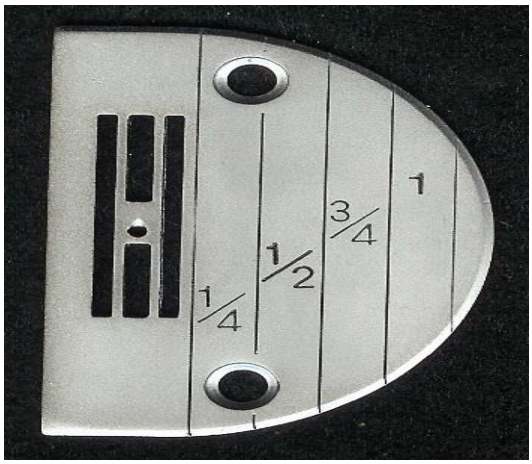


Figure 2.10: Throat Plate

2.5.5 Feed dog:

Sewing machine feed dogs are metal teeth-like ridges that emerge from a hole in the throat plate of a sewing machine. Feed dogs gently gripping the bottom fabric to help it pass through the sewing machine and produce a high-quality stitch. For most of the time, the operative motion is forward but in specific cases the motion is reversed. It is most important part of feed mechanism. The main function of this part is to move sewn fabric after making individual stitch as predetermined length. To prevent the slippage of the fabric the upper part of the feed dog are made toothed.

Figure 2.11: Feed dog

2.5.6 Presser foot:

A presser foot is an attachment used with sewing machines to hold fabric flat as it is fed through the machine and stitched. Sewing machines have feed dogs in the bed of the machine to provide traction and move the fabric as it is fed through the machine, while the sewer provides extra support for the fabric by guiding it with one hand. A presser foot keeps the fabric flat so that it does not rise and fall with the needle and pucker as it is stitched. When especially thick workpieces are to be sewn, such as quilts, a specialized attachment called a walking foot is often used rather than a presser foot. Presser feet are typically spring-hinged to provide some flexibility as the work piece moves beneath it.

Figure 2.12: Pressure foot

2.5.7Sewing Needle:

From the ancient period to present day sewing needles are widely used for sewing. Sewing machine needle actually used for sewing purposes pointed at one end with an eye for thread or yarn. A sewing needle is a long slender tool with a pointed tip.In the ancient time peoples are used to bone or wood made sewing needle; modern ones are manufactured from high carbon steel wire, nickel- or 18K gold plated for corrosion resistance. The highest quality embroidery needles are made of platinum. Traditionally, needles have been kept in needle books or needle cases which have become an object of adornment. Needle size is denoted by a number on the packet. The convention for sizing is that the length and thickness of a needle increases as the size number decreases. For example, a size 1 needle will be thicker and longer, while a size 10 will be shorter and finer.

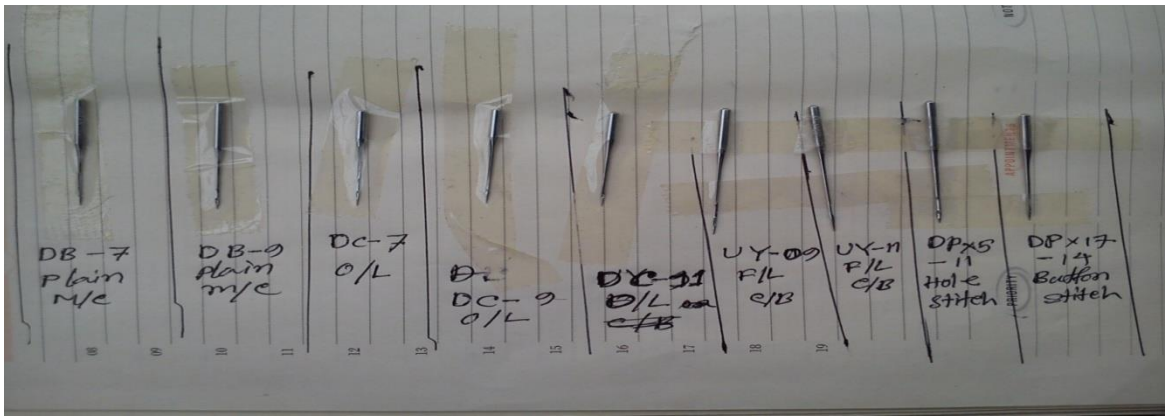


Figure 2.13: Types of Needles are Used in Industry

2.5.8 The Basic Function of Sewing Needle:

- To make a hole in the fabric without damaging the threads of the fabric.
- To make a needle thread loop.
- To pass the needle thread loop through the loop or loops of the looper thread.

2.5.9 Various Parts of Needle & Their Function:

- **Butt**:The starting part of bottom edge of needle which can be made by predetermined shape. Butt helps for easily attaching of needle with the needle bar or clamp of the sewing machine.
- **Shank:** Upper part of the needle which is tied in the needle bar and which supports the needle.

- **Shoulder:** Middle part of the shank and blade is shoulder. It helps to make the hole of the fabric and strengthen the needle blade.
- **Blade:** Longest part of the needle from the shoulder to needle eye. In this portion, friction between fabric and needle is maximum. Blade is gradually tapered to tip.
- **Long groove:** Long groove is a long and thin groove in blade from shoulder to needle eye. Sewing thread take place in this groove during up and down of sewing machine needle through the fabric in sewing time, thus reduce the friction between needle, fabric and sewing thread**.** There is lower possibility of damaging thread due to friction.
- **Short groove**:It is formed on the other side of long groove, towards the shuttle, hook, or looper and it assists in throwing the loop of needle thread
- **Eye:** The eye of the needle is present in the bottom end of the blade. Needle thread allowed through this eye is taken to the bottom area
- **Scarf**: The groove of the needle above the eye is called scarf. Its purpose is to enable the closer setting of looper to the needle.
- **Point:** The portion from the eye to the tip of the needle is called point. Point should be different for different type of fabric.
- **Tip**: The last (extreme end) part of the needle is called tip. It helps to create hole in the fabric during sewing.

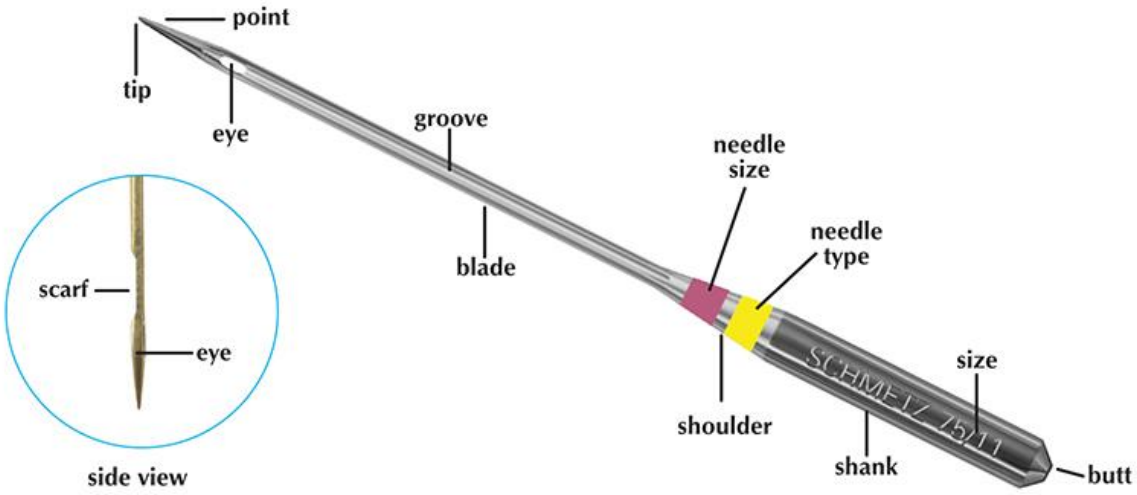


Figure 2.14: Various Parts of a Sewing Needle

2.5.10 Needle Identification:

A sewing machine needle is identified with three parameters-

- System (m/c)
- Point
- Size with Number

2.5.11 Effect of Wrong Needle Selection:

- ✓ If the needle is finer then sewing thread:
  - The thread cannot move easily through the needle eye.
  - The thread will not take position perfectly at needle long groove.
  - The result is more thread breakage & production loss.

- ✓ If the thread is finer than needle:
  - May produced slipped stitch as the needle can not create perfect size or loop.

- ✓ If the needle is coarse than required fabric:
  - Fabric will be locked odd due to bigger hole.
  - Seam pucker may be produced on woven fabric.

- ✓ If the needle is finer than required fabric:
  - During sewing needle will be deflect & become curve with the action of throat plate.
  - This curve needle will produce slip stitch as the looper may not catch the loop needle thread.

2.6 Sewing Thread:

Sewing threads are special kinds of yarns that are engineered and designed to pass through a sewing machine rapidly. They form efficient stitches without breaking or becoming distorted during the useful life of the product. The basic function of a thread is to deliver aesthetics and performance in stitches and seams.

Figure 2.15: Sewing Thread

2.6.1 Types of Sewing Thread in Used:

Various types of sewing thread which are vastly used in garments manufacturing has mentioned in the below:

- Nylon thread
- Silk thread
- Aramide thread
- PEFE thread
- Soft cotton thread
- Mercerized cotton thread
- Glassed cotton thread
- Viscose thread
- Polyester thread
- Linen thread

2.6.2 Characteristics of Sewing Thread:

There are different key properties of sewing thread which are mentioned in the following

- Tensile strength
- Tenacity
- Loop strength
- Loop strength ratio
- Minimum loop strength

- Elongation at break
- Stress strain curve
- Elasticity
- Shrinkage
- Abrasion resistance
- Color fastness

2.6.3 Sew Ability:

Sew ability' of thread is a term used to describe a sewing thread's performance. A thread with good sew ability is uniform in diameter with a good surface finish. Longitudinal uniformity of thread contributes to uniform strength and reduced friction, as it passes through the stitch forming mechanisms. It also minimizes thread breakages and the associated costs incurred from rethreading machines, repairing stitches and producing inferior quality products.

2.6.4 Sew ability parameters:

The parameters that define the superior sew ability of thread are:

- No breakages in high-speed sewing.
- Consistent stitch formation.
- No skipped stitches.
- Evenness, to prevent changes in tension during sewing.
- A high level of abrasion resistance.
- Sufficient surface smoothness, to pass easily through the machine guides.

2.6.5 Relation between thread size, needle size & fabric:

Matric ticket	Fabric	Singer needle size	Matric needle size	
270,330		Light	7	5
		Medium	9	65
		Heavy	10	75
210,180,150		Light	9	65
		Medium	10	70
		Heavy	11	75
135,120,100,80		Light	11	75
		Medium	12	80
		Heavy	14	90
75,60		Light	14	90
		Medium	16	100
		Heavy	18	110
50,40		Light	16	100
		Medium	18	110
		Heavy	19	120

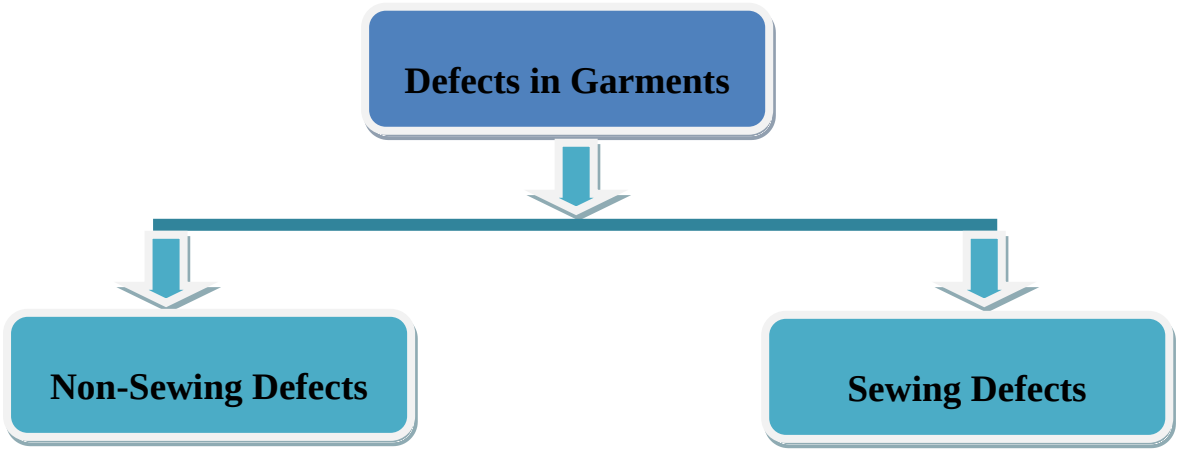
2.7 Defects of Garments:

The defect is the common term in the garment industry. Garment defects are also well known as reject the item. Different types of defects are found in the garment industry. In garments industry these defects are dependent upon the classification of defects and an inspector's ability to make decisions. Creating a list of every defect that might be encountered during a quality inspection is not realistic.

According to the garments workmanship and appearance garments defects are divided in the three ways-

a. Critical defects
b. Major defects
c. Minor defects

Causes of defects: There are two main causes of defects



2.8 Non-Sewing Defect:

Defects may occur in garments industry produced on mass scale. The sources of defects are given below:

- Defects due to cutting of fabrics, lining, interlining by wrong pattern.
- Defect occurs due faulty raw material.
- Defects due to wrong marking, wrong spreading etc.
- Defects due to oil marks.
- Defects due to wrong ironing, folding, packing, packaging etc.

2.9 Sewing Defect:

Defects may occur in garments industry produced on mass scale. The sources of defects are given below:

- **Defects due to problems of Stitch & Seam formation:**

These types of faults occur in sewing floor during sewing the garments. Some faults are make garments rejected, and can possible to remedy.

Common faults are given bellow with their cause and remedies.

2.9.1 Skipped Stitch:

They occur when the bobbin or looped of the machine cannot pick up the loop in the needle thread. Slipper stitch with a lock stitch machine leads to creating a gap in seam and a poor appearance in top stitching. So, if the gap of stitch or miss stitches formation then the fault called skipped stitch.

Figure 2.16: Skip stitch

Causes:

- Failure of needle to enter loop at correct time
- Needle deflection or bent needle
- Thread loop failure due to incorrect needle size for thread size
- Incorrect sewing tension in the needle
- Thread loop failure due to incorrect setting of thread control mechanism
- Flagging of fabric due to poor presser foot control

Remedies:

- Check needles is inserted and aligned correctly.
- Machine clearance and timings.
- Replace the needle.
- Change needle size in accordance with thread size.
- Re adjusts the thread tension.
- Reset to standard and check loop formation through jog mechanism.
- Re adjusts presser foot pressure.

2.9.2 Thread Breakage:

Needle and bobbin or lopper threads break mainly due to metal surface being chipped or otherwise damaged and then causing damage to the thread. The guard over the hook in a plain machine or the needle hole in the throat plate can become chipped as a result of needle defection.

Figure 2.17: Thread Breakage

Causes:

- Thread construction
- Uniformity of construction
- Twist level
- Fiber cohesion characteristics
- Thread finish (e.g., soft, bonded, glanced)

Remedies:

- Try sewing with thread from a different case or shipment.
- Make sure the correct thread type and size is being used.
- Send cones that are breaking to your thread supplier for evaluation.
- If the fabric appears to be different, see if fabric from a different shipment causes the same problem.
- Check the needle & sewing pressure, change the needle.

2.9.3 Joint Stitch:

When joint two fabric or hem stitch by sewing than have a stitch point that place sewing is start and end of sewing. Sometime this joint point is not uniform that is called joint stitch defects.

Figure 2.18: Joint stitch

Causes:

- For the lack of experience or concentration of worker.
- Sometime for the machine problem.

Remedies:

- Seam is open and sewing again correctly.
- If machine measurement problem then solve it.

2.9.4 Uneven Stitch:

If any seam line is not uniform and two line of stitch are not to be regular or actual measurement are missing in the garments seam that called Uneven Stitch.

Figure 2.19: Uneven stitch

Causes:

- For the lack of experience or concentration of worker.
- Sometime for the machine problem.

Remedies:

- Seam is open and sewing again correctly.
- If machine measurement problem then solve it.

2.9.5 Broken Stitch:

If any stitch are broken after sewing then it known as broken stitch.

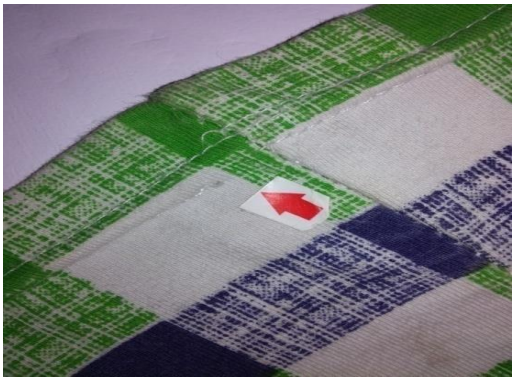


Figure 2.20: Broken stitch

Causes:

- This types of fault is occurred because of low quality thread.
- High thread tension.
- Garments Washing process.
- Seam failure.
- Uneven Washing process.

Remedies:

- Make sure the sewing thread quality.
- Make sure good sewing Process.
- Monitor the washing process, cycle times, and temperatures to make sure they are correct so that the best possible garment quality can be achieved.

2.9.6 Open Seam:

If seam line is open or lose the seam and missing the stitch after sewing process that called Open seam. It's a major sewing defect.

Figure 2.21: Open seam

Causes:

- Failure of needle to enter loop.
- Needle deflection.
- Thread loop failure.
- Incorrect sewing tension in the needle.
- Flagging of fabric due to poor presser foot control.
- It's mainly mechanical problem.

Remedies:

- Check needles is inserted and aligned correctly Replace the needle.
- Re adjusts the thread tension.
- Reset to standard and check loop formation through jog mechanism.
- Re adjusts presser foot pressure.

2.9.7 Joint Uneven:

If the all joint of the garments in sewing is not uniform. Such as defects in shoulder joint of garments, defects in Neck Rib Joint of garments, defects in Sleeve joint and Top stitch of garments, Curve at side Seam, defects in Collar Joint Top sine & Make of garments, defects in Shoulder to Shoulder Back Tape of garments etc.

Figure 2.22: Joint uneven

Causes:

- For the lack of experience or concentration of worker.
- Sometime for the machine problem.

Remedies:

- Seam open and sewing again correctly.
- If machine measurement problem then solve it.

2.9.8 Raw Edge Problem:

If unexpected parts are shown by the garments from sewing area then this problem is occurred that called Raw edge problem.

Figure 2.23: Raw Edge

Causes:

- For the lack of experience or concentration of worker.

Remedies:

- The unexpected part is cut out precisely.
- Seam Open and Clear that part and sewing again.

2.9.9 Needle Mark:

Without sewing requirement if give the sewing at garment of fabric then open the sewing but sew up needle hole at the fabric that called Needle mark.

Figure 2.24: Needle Mark

Causes:

- For uneven stitch or any uneven seam want to uniform then open that stitch or seam after that making this Needle mark.
- For the lack of experience or concentration of worker.

Remedies:

- To remedies any types of sewing faults.
- To ironing at good temp. &uniform.

2.9.10 Yarn Mark:

If extra yarns or threads are entered into sewing or seam line then this fault is called yarn mark.

Figure 2.25: Yarn Mark

Causes:

- Another types of yarn or thread are attend near of the sewing.
- For without matching thread with the fabric.

Remedies:

- Before Sewing all of the extra yarns have to clean which are not used in sewing purpose at the sewing machine.

2.9.11 Uncut/Loose Thread:

Extra thread or loose thread on seam line then this fault is called uncut thread.

Figure 2.26: Uncut/Loose thread

Causes:

- It appears due to improper trimming or finishing.
- In sewing process extra thread allowance.

Remedies:

- Garments finishing should be checked properly.
- Sewing thread use properly.

2.9.12 Label Displace:

Position mistake of label is known as label displace.

Figure 2.27: Label displacement

Causes:

- For the lack of experience or concentration of worker.

Remedies:

- Label is removed and placed again in correct position and attach again.

2.9.13 Shade Problem:

Difference of shade between two parts of garment is known shade problem. When sewing is running then if body or sleeve, back part or front part or rib neck part are difference color shade occurred then this problem is called Shade problem.

Figure 2.28: Shade Problem

Causes:

- For the lack of experience or concentration of worker and if different parts are mixed by worker.

Remedies:

- Shade problem parts are separate and actual parts are attached again.

2.9.14 Stitch Miss:

When any sewing operation go to miss unconsciously but assembling of garments is already going forward.

Figure 2.29: Stitch miss

Causes:

- For the lack of experience or concentration of worker.

Remedies:

- Operator need to careful about operation.
- Operation need to do again.

2.9.15 Oil Spot:

When the spot of oil and wax are found on the fabric surface are known as oil spot.

Figure 2.30: Oil spot

Causes:

- During sewing process if oil and wax are deposit from the machine to the fabric surface then oil spot is occurred. It's creating a bad spot image on the fabric surface.

Remedies:

- Oil spot is removed from the fabric by a special type of spray named 'Spot lifter'. First its spray on the spot and then air blown on the spot by a machine named 'spot cleaning machine'.

2.9.16 Hole:

Broken holes in the fabric where you are able to see through the fabric to the other side.

Figure 2.31: Hole

Causes:

- Holes can come from fabric or it could be caused by the production side, either by improper trimming or broken needle puncturing the fabric.
- Very stiff & dry yarn.
- Improper cleaning.

Remedies:

- Better inspection of fabric and cut piece.
- Use a fabric fault detector.
- Air humidification.
- Use of yarn having lower hairiness.

2.9.17 Pleating:

The folded edge occurred during sewing.

Figure 2.32: Pleating

Causes:

- Work not carefully.
- Speedy work by operator.

- Inaccuracy in cutting parts.
- Fabric crease mark.

Remedies:

- Carefully work.
- Cutting part accuracy.
- Remove crease from fabric edge.

❖ Defects due to Fabric Distortion or Puckering:

Puckering is wrinkle appearance along a seam line in a smooth fabric. It is one of the most frequently occurring defects. Puckering shows that as if there is too much fabric and not enough thread in the seam and as if the thread is drawing the seam in. this is the reason why sewing thread is often blamed for causing puckering though there are other factors as well for promotion of puckering. They are given below:

- Fabric structure.
- Seam construction
- Needle size.
- Material feeding problem.
- Wrong thread tension
- Unsuitable thread

Puckering may be visible as soon as sewing is complete but some appear later when the garment is ironed or washed. It is generally said that stitching on a fabric always leads to some amount of puckering or fabric distortion. Fabric from synthetic fibers generally has a tendency to show up puckering. A puckering is the most frequently occurring sewing seriously investigated by researchers who found five reasons of puckering.

2.9.18 Seam Puckering:

Seam puckering refers to the gathering of a seam either just after sewing or after laundering causing an unacceptable seam appearance.

Figure 2.33: Seam puckering

Causes:

- Uneven stretching on to plies of fabric during sewing.
- Improper thread tension.
- Wrong sewing thread selection.
- Dimensional instability of the plies of fabric etc.

Remedies:

- Feed dog, eyelets and thread guides should be checked periodically for damages.
- Machine feed mechanism must be better quality.
- Operator training.
- Tension, SPI and presser foot pressure should not be fiddled with much.
- Needle-thread-fabric combination should be well judged.
- Sewing thread must be selected properly.

Chapter: 3

Experiment Details & Data Collection

3.1 Methodology:

The research methodology adopted for this study and brain storming. The case study conducted on two garments industry named "Suprov Composite Knit Ltd." & "AmanTex Ltd." Both are located Gazipur, Dhaka. Preliminary investigation was carried out in sewing floor. It is found that, sewing floor is highly suffered from defects and rework problems. For this reason sewing line is identified in order to conduct research work. The aim of this work is to find out different sewing faults which are commonly occurred during operation and minimize the defects percentages to reduce production time and cost.

Primary data are collected from sewing line; Secondary data of the sewing section was collected from the management of those industries. The data was collected for different garments according to our observation and using the end line quality data provided by the management we identified some repetitive defects that occur in sewing section.

After identifying the major causes of the top occurring defects, corresponding suggestions to minimize the frequency of those defects were provided. The suggestions were made based on the brain storming.

3.2 Data Collection:

Data sheets were collected for quality department of sewing section, some data are collected from quality table end of the line of the garments production floor. A total of 18649 pieces garments checked and 1190 pieces were found defective and 63 pieces rejected.

3.3 DHU Analysis:

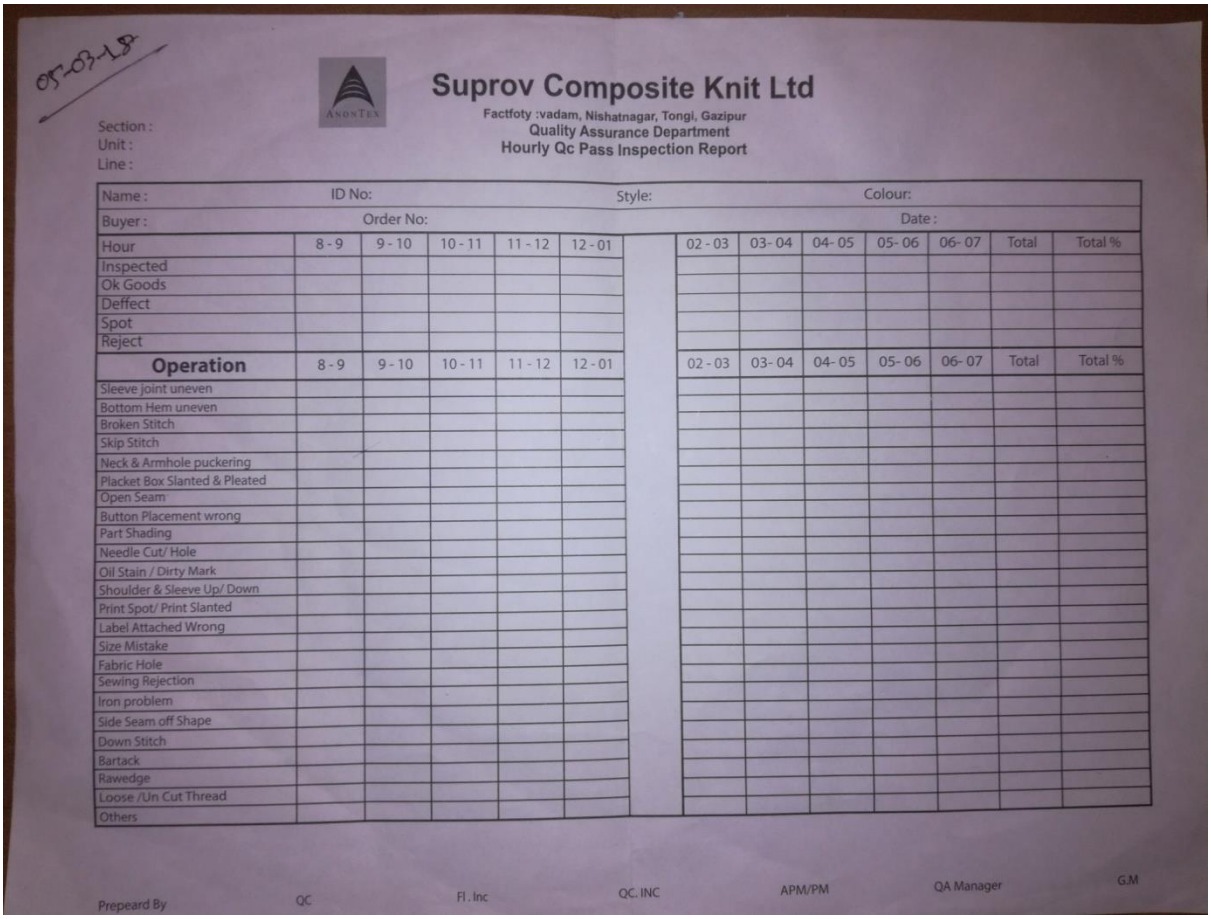
DHU stands for "**Defect per Hundred Units"**. It means number of defeats found or detected per 100 garments.

DHU = Total Defects found *100/ Total garments inspection

In this analysis all data collect in a DHU report sheets

3.4 Quality Inspection Report:

(a)Hourly QC Pass inspection report of "Suprov Composite Knit Ltd."



05-03-18

Section :
Unit :
Line :

Suprov Composite Knit Ltd

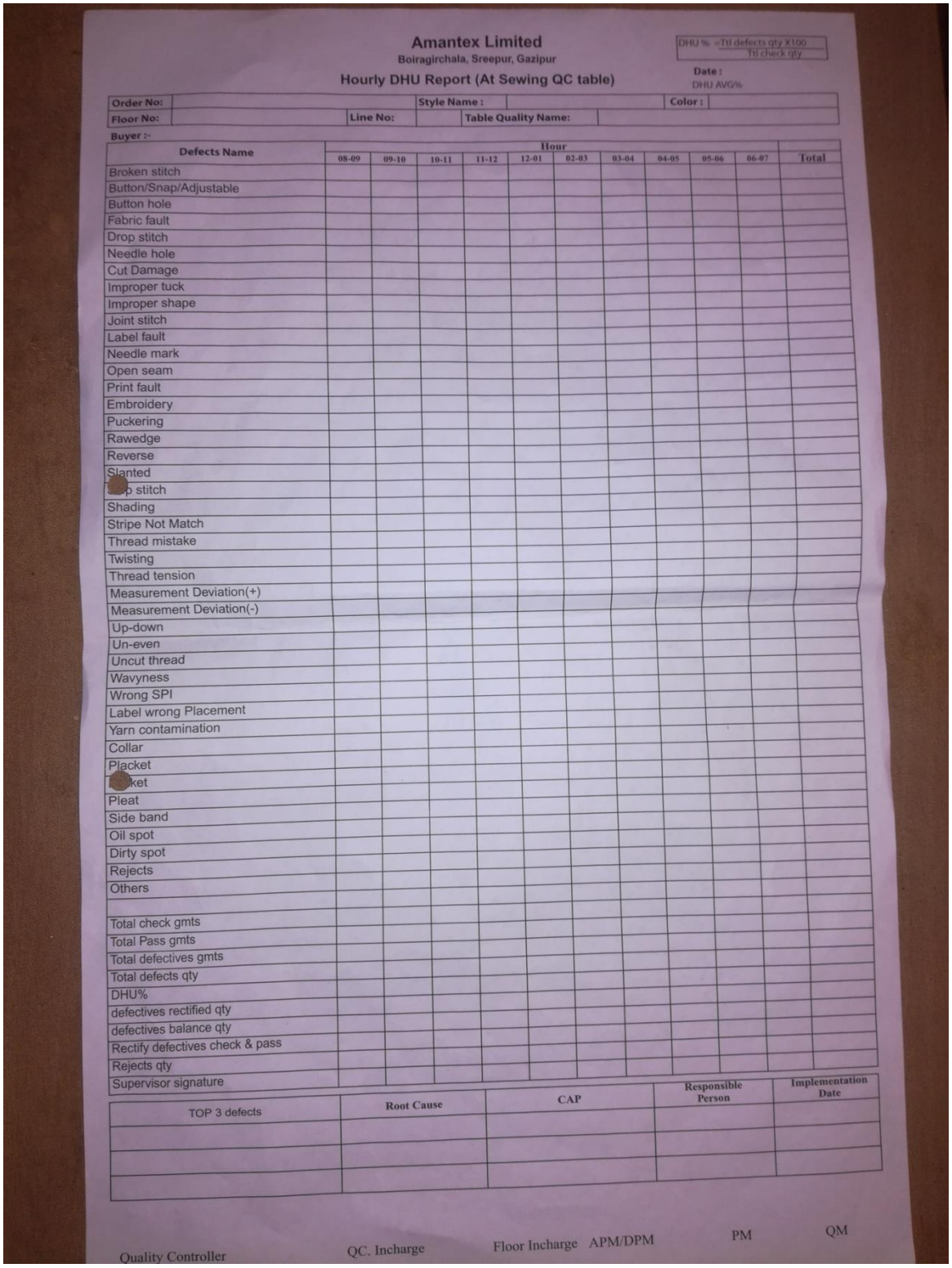
Factfoty :vadam, Nishatnagar, Tongi, Gazipur
Quality Assurance Department
Hourly Qc Pass Inspection Report

Name :	ID No:			Style:				Colour:					
Buyer :	Order No:							Date :					
Hour	8 - 9	9 - 10	10 - 11	11 - 12	12 - 01	02 - 03	03- 04	04- 05	05- 06	06- 07	Total	Total %
Inspected												
Ok Goods												
Deffect												
Spot												
Reject												
Operation	8 - 9	9 - 10	10 - 11	11 - 12	12 - 01	02 - 03	03- 04	04- 05	05- 06	06- 07	Total	Total %
Sleeve joint uneven												
Bottom Hem uneven												
Broken Stitch												
Skip Stitch												
Neck & Armhole puckering												
Placket Box Slanted & Pleated												
Open Seam												
Button Placement wrong												
Part Shading												
Needle Cut/ Hole												
Oil Stain / Dirty Mark												
Shoulder & Sleeve Up/ Down												
Print Spot/ Print Slanted												
Label Attached Wrong												
Size Mistake												
Fabric Hole												
Sewing Rejection												
Iron problem												
Side Seam off Shape												
Down Stitch												
Bartack												
Rawedge												
Loose /Un Cut Thread												
Others												

Prepeard By QC FI . Inc QC. INC APM/PM QA Manager G.M

Figure 3.1: Hourly QC Pass Inspection Report (blank)

(b) Hourly DHU Report of "AmanTex Ltd."



Amantex Limited

Boiragirchala, Sreepur, Gazipur

DHU % =Ttl defects qty X100 / Ttl check qty

Hourly DHU Report (At Sewing QC table)

Date :

DHU AVG%

Order No:		Style Name :		Color :	
Floor No:		Line No:		Table Quality Name:	

Buyer :-

Defects Name	Hour										Total
	08-09	09-10	10-11	11-12	12-01	02-03	03-04	04-05	05-06	06-07	
Broken stitch											
Button/Snap/Adjustable											
Button hole											
Fabric fault											
Drop stitch											
Needle hole											
Cut Damage											
Improper tuck											
Improper shape											
Joint stitch											
Label fault											
Needle mark											
Open seam											
Print fault											
Embroidery											
Puckering											
Rawedge											
Reverse											
Slanted											
[illegible]p stitch											
Shading											
Stripe Not Match											
Thread mistake											
Twisting											
Thread tension											
Measurement Deviation(+)											
Measurement Deviation(-)											
Up-down											
Un-even											
Uncut thread											
Wavyness											
Wrong SPI											
Label wrong Placement											
Yarn contamination											
Collar											
Placket											
[illegible]cket											
Pleat											
Side band											
Oil spot											
Dirty spot											
Rejects											
Others											
Total check gmts											
Total Pass gmts											
Total defectives gmts											
Total defects qty											
DHU%											
defectives rectified qty											
defectives balance qty											
Rectify defectives check & pass											
Rejects qty											
Supervisor signature											

TOP 3 defects	Root Cause	CAP	Responsible Person	Implementation Date

Quality Controller QC, Incharge Floor Incharge APM/DPM PM QM

Figure 3.2: Hourly DHU Report of "AmanTex Ltd." (Blank)

3.5.1 Sewing Defects Inspection Table (Suprov Composite Knit Ltd.):

These tables contain data about sewing faults for 8working days, 03rd February'18 to 11th February'18.

Table 3.1

Order No: 269935			Style No: SSV TP CARLY				Color: OFF WHITE			
Buyer: ASIA TODAY							Date: 03-02-2018			
Defects Name	Hour									
	08-09	09-10	10-11	11-12	12-01	02-03	03-04	04-05	05-06	06-07	Total
Sleeve Joint Uneven		1				1		1			3
Bottom Hem Uneven			1						1	1	3
Broken Stitch	1				1						2
Skip Stitch			1				1		1		3
Puckering											
Slanted & Pleated											
Open seam	1			1		1				1	4
Part Shading											
Needle cut/Hole											
Oil satin		1		1				1			3
Up-Down			1								1
Label attached wrong											
Sewing rejection			1			1				1	3
Down stitch		1			1	1		1		1	5
Bartack											
Raw Edge											
Un Cut thread											
Others									1	1	2
Total Inspected Qty	72	103	104	72	82	104	51	53	53	105	799
Total OK Goods	70	100	100	70	80	100	50	50	50	100	770
Defectives Qty	2	3	4	2	2	4	1	3	3	5	29
Rejects Qty			1			1				1	03
DHU%											3.63%
QC pass%											96.37%

Table 3.2

Order No:216-217			Style No:P42479				Color: WHITE			
Buyer: KIK							Date: 04-02-2018			
Defects Name	Hour									
	08-09	09-10	10-11	11-12	12-01	02-03	03-04	04-05	05-06	06-07	Total
Sleeve Joint Uneven											
Bottom Hem Uneven											
Broken Stitch	1		1		1						3
Skip Stitch		1	1		1	1	1		1		6
Puckering											
Slanted & Pleated											
Open seam	1	1		1	1	1	1		1		7
Part Shading											
Needle cut/Hole											
Oil satin	3	4	3	3	4	6	3	2	2	2	32
Up-Down											
Label attached wrong											
Sewing rejection	1				1						2
Down stitch		1	1	1	1	2	1	1	1	1	10
Bartack											
Raw Edge											
Un Cut thread											
Others			1	1		1	1	1		1	6
Total Inspected Qty	106	107	107	106	119	141	127	104	105	134	1156
Total OK Goods	100	100	100	100	110	130	120	100	100	130	1090
Defectives Qty	6	7	7	6	9	11	7	4	5	4	66
Rejects Qty	1				1						2
DHU%											5.88%
QC pass%											94.12%

Table 3.3

Order No: 216-217			Style No: P33624				Color: BRIGHT WHITE			
Buyer: KIK							Date: 05-02-2018			
Defects Name	Hour									
	08-09	09-10	10-11	11-12	12-01	02-03	03-04	04-05	05-06	06-07	Total
Sleeve Joint Uneven	1	1	1	1	3	1	1	1	1	2	13
Bottom Hem Uneven											
Broken Stitch				1				1	1	1	04
Skip Stitch		1	2			1	1	1	1	2	09
Puckering					2	1					03
Slanted & Pleated							1				01
Open seam	1	1	1	1			1	1	1	2	09
Part Shading											
Needle cut/Hole											
Oil satin	1	2	1	1	2	3	2	3	2	4	21
Up-Down											
Label attached wrong											
Sewing rejection	1		2		1	2		2		3	11
Down stitch		1				1	1	1	1	2	07
Bartack											
Raw Edge											
Un Cut thread											
Others			2							1	3
Total Inspected Qty	64	106	119	124	128	159	157	158	157	317	1489
Total OK Goods	60	100	110	120	120	150	150	148	150	300	1408
Defectives Qty	4	6	9	4	8	9	7	10	7	17	81
Rejects Qty	1		2		1	2		2		3	11
DHU%											5.31%
QC pass%											94.69%

Table 3.4

Order No: 202-231			Style No: P40414				Color: GREY MELANGE			
Buyer: KIK							Date: 06-02-2018			
Defects Name	Hour									
	08-09	09-10	10-11	11-12	12-01	02-03	03-04	04-05	05-06	06-07	Total
Sleeve Joint Uneven											
Bottom Hem Uneven											
Broken Stitch			1		1		2			2	06
Skip Stitch	1			1		1			2		05
Puckering											
Slanted & Pleated											
Open seam	1	1		2		1		2	1	2	10
Part Shading											
Needle cut/Hole											
Oil satin		1			1	1		1		2	06
Up-Down											
Label attached wrong		1	1		1		2			1	06
Sewing rejection				1	1						02
Down stitch			1	1		2		1			05
Bartack											
Raw Edge											
Un Cut thread											
Others					1		1		1		03
Total Inspected Qty	62	63	63	105	105	105	105	104	104	167	983
Total OK Goods	60	60	60	100	100	100	100	100	100	160	940
Defectives Qty	2	3	3	5	5	5	5	4	4	7	43
Rejects Qty				1	1						02
DHU%											4.38%
QC pass%											95.62%

Table 3.5

Order No:1073-3351			Style No: 17-1334				Color: GREY			
Buyer: TRAMPOLIN							Date: 07-02-2018			
Defects Name	Hour									
	08-09	09-10	10-11	11-12	12-01	02-03	03-04	04-05	05-06	06-07	Total
Sleeve Joint Uneven											
Bottom Hem Uneven											
Broken Stitch	1			1			1			1	4
Skip Stitch		1				2			1	1	5
Puckering											
Slanted & Pleated											
Open seam	1		1		1		1	1			5
Part Shading											
Needle cut/Hole											
Oil satin	1		1		1		2				5
Up-Down											
Label attached wrong		1		1		1					3
Sewing rejection		1				1		1			3
Down stitch		1		1	1		1		1		5
Bartack											
Raw Edge											
Un Cut thread											
Others			1			1				1	3
Total Inspected Qty	63	84	73	74	73	85	55	32	42	93	674
Total OK Goods	60	80	70	71	70	80	50	30	40	90	641
Defectives Qty	3	4	3	3	3	5	5	2	2	3	33
Rejects Qty		1		1		1		1			4
DHU%											5.04%
QC pass%											94.96%

Table 3.6

Order No:1073-3351			Style No: 17-1334				Color: OLIVE			
Buyer: TRAMPOLIN							Date: 08-02-2018			
Defects Name	Hour									
	08-09	09-10	10-11	11-12	12-01	02-03	03-04	04-05	05-06	06-07	Total
Sleeve Joint Uneven											
Bottom Hem Uneven											
Broken Stitch	1		1		1		1			1	5
Skip Stitch		1		1		1		1		1	5
Puckering											
Slanted & Pleated											
Open seam	1		1		1		1	1			5
Part Shading											
Needle cut/Hole											
Oil satin		1	2		2		1		2		8
Up-Down											
Label attached wrong		1		1		1			1		4
Sewing rejection	1			1		1					3
Down stitch		1		1	1		1			1	5
Bartack											
Raw Edge									2		2
Un Cut thread											
Others				1		1			1	1	4
Total Inspected Qty	63	74	39	85	75	85	84	82	96	144	827
Total OK Goods	60	70	35	80	70	81	80	80	90	140	786
Defectives Qty	3	4	4	5	5	4	4	2	6	4	41
Rejects Qty	1			1		1					3
DHU%											5.08%
QC pass%											94.92%

Table 3.7

Order No:FC-1111N			Style No: 1299				Color: BLACK LONG			
Buyer: NORMH							Date: 10-02-2018			
Defects Name	Hour									
	08-09	09-10	10-11	11-12	12-01	02-03	03-04	04-05	05-06	06-07	Total
Sleeve Joint Uneven											
Bottom Hem Uneven											
Broken Stitch	1	1	2								4
Skip Stitch	2	1	1	1		1	1			2	9
Puckering											
Slanted & Pleated											
Open seam		2		2	1	1				1	7
Part Shading											
Needle cut/Hole											
Oil satin	1	2	1		2						6
Up-Down											
Label attached wrong		1	1		1						3
Sewing rejection											
Down stitch					1						1
Bartack					1						1
Raw Edge											
Un Cut thread					2						2
Others											
Total Inspected Qty	124	147	145	123	148	92	21			43	843
Total OK Goods	120	140	140	120	140	90	20			40	810
Defectives Qty	4	7	5	3	8	2	1			3	33
Rejects Qty											
DHU%											3.92%
QC pass%											96.08%

Table 3.8

Order No:FC-1111N			Style No: 1299				Color: BLACK LONG			
Buyer: NORMH							Date: 11-02-2018			
Defects Name	Hour									
	08-09	09-10	10-11	11-12	12-01	02-03	03-04	04-05	05-06	06-07	Total
Sleeve Joint Uneven											
Bottom Hem Uneven											
Broken Stitch	1			2	1	1		1	1		7
Skip Stitch	2	2	3	5	2	2	1	3	1	3	24
Puckering											
Slanted & Pleated											
Open seam	1	2		1	2	1	2	1	2	3	15
Part Shading											
Needle cut/Hole											
Oil satin	1	2	2	2	1		2		1	2	13
Up-Down											
Label attached wrong	1		2		1	1	1				6
Sewing rejection		1									1
Down stitch			1								1
0Bartack											
Raw Edge											
Un Cut thread											
Others											
Total Inspected Qty	106	107	128	170	167	175	176	165	155	298	1647
Total OK Goods	100	100	120	160	160	170	170	160	150	290	1580
Defectives Qty	6	7	8	10	7	5	6	5	5	8	67
Rejects Qty		1								2	3
DHU%											4.07%
QC pass%											95.93%

Table 3.9: Summary of Reports (Suprov Composite Knit Ltd.)

Date	Buyer	Style	Inspected Qty	Defects															
				Sleeve Join Uneven	Bottom Hem Uneven	Broken Stitch	Skip Stitch	Puckering	Pleated	Open Seam	Oil Stain	Up-down	Label Attached Wrong	Sewing Rejection	Down Stitch	Bartack	Raw Edge	Un Cut Thread	Others
03-02-18	ASIA Today	SSV TP	799	03	03	02	03			04	03	01		03	05				02
04-02-18	KIK	P42479	1156			03	06			07	32			02	10				06
05-02-18	KIK	P33624	1489	13		04	09	03	01	09	21			11	07				03
06-02-18	KIK	P40414	983			06	05			10	06		06	02	05				03
07-02-18	TRAMPOLIN	17-1334	674			04	05			05	05		03	03	05				03
08-02-18	TRAMPOLIN	17-1334	827			05	05			05	08		04	03	05		02		04
10-02-18	NORMH	1299	843			04	09			07	06		03		01	01		02	
11-02-18	NORMH	1299	1647			07	24			15	13		06	01	01				
Grand Total		8418		16	03	35	66	03	01	62	94.	01	22	25	39	01	02	02	21
				393 (4.67%)															
		Defects%		4.07	0.76	8.91	16.80	0.76	0.254	15.78	23.91	0.254	5.60	6.36	9.93	0.254	0.51	0.51	5.34

3.5.2 Sewing Defects Inspection Table (Aman Tex Ltd.)

These tables contain data about sewing faults for 6 working days, 13th March'18 to 19thMarch'18.

Table 3.10

Order No: 289774			Style No: BOB VNECK				Color: BLACK			
Buyer: H&M							Date:13-03-18			
Defects Name	Hour									
	08-09	09-10	10-11	11-12	12-01	02-03	03-04	04-05	05-06	06-07	Total
Broken stitch	2	1		2	2		1	2	1	2	13
Drop stitch											
Needle hole											
Improper tuck	1		1	2	1	2	3		1	2	13
Improper shape											
Join stitch		2	1		2		2	2			09
Label fault											
Open seam	2		3		1					6	12
Puckering		2				3		2			07
Raw edge	1		2							2	05
Reverse		2			1	2		1	2	2	10
Slanted			2		2	2	2		2		10
Skip stitch					2					2	04
Shading											
Stripe not match											
Up-Down	2	1	2	1	2	3	5	2	2	2	22
Up-even				1				2			03
Uncut thread	2	2	2	2	3	2	5	3	3	2	26
Label wrong place			1	2						2	05
Pleat		1		1	2				2	2	07
Oil spot											
Dirty spot											
Rejects										3	03
Others		2	1	2		2			2	3	12
Total check Qty	85	191	192	150	147	169	171	135	178	235	1653
Pass Qty	75	178	177	137	129	153	153	121	163	206	1492
Total defectives	10	13	15	13	18	16	18	14	15	29	161
Rejects Qty										3	03
DHU%	11.76	6.80	7.81	8.66	12.24	9.46	10.52	10.37	8.42	12.34	9.74%
QC Pass%											90.26%

Table 3.11

Order No: 171494			Style No: DEER93				Color: BLACK			
Buyer: SPLASH							Date: 14-03-2018			
Defects Name	Hour									
	08-09	09-10	10-11	11-12	12-01	02-03	03-04	04-05	05-06	06-07	Total
Broken stitch	1		1	1	1	1					05
Drop stitch											
Needle hole											
Improper tuck											
Improper shape											
Join stitch			1			1				2	04
Label fault											
Open seam								3			03
Puckering											
Raw edge		1	1	2	1		3	2		3	13
Reverse			2		1					1	04
Slanted											
Skip stitch				3	2	1		5	3	4	18
Shading											
Stripe not match											
Up-Down		2	1	2	5	6	3	4	4	3	30
Up-even	5	6	5	5	2	2					25
Uncut thread	3	5	4	5	8	7	5	7	5	6	55
Label wrong place											
Pleat											
Oil spot											
Dirty spot											
Rejects		1	1	1		2		2			07
Others											
Total check Qty	100	140	160	150	170	175	110	220	200	190	1615
Pass Qty	91	125	144	131	150	155	99	197	188	171	1451
Total defectives	9	15	16	19	20	20	11	23	12	19	164
Rejects Qty		1	1	1		2		2			07
DHU%	9	10.71	10	12.66	11.76	11.42	10	10.45	6	10	10.15%
QC pass%											89.85%

Table 3.12

Order No: A0-1354			Style No: TOWNTES				Color: TOTALELLIPES			
Buyer: JACK & JONES							Date: 15-03-2018			
Defects Name	Hour									
	08-09	09-10	10-11	11-12	12-01	02-03	03-04	04-05	05-06	06-07	Total
Broken stitch	1				1			2		1	05
Drop stitch											
Needle hole									3		03
Improper tuck							1				01
Improper shape											
Join stitch	2	1	1		3	7	2	4	1	1	22
Label fault										1	01
Open seam			1	1		1	1				04
Puckering		1		2		1					04
Raw edge		3	2	4	2		1		7	1	20
Reverse	1	1	1								03
Slanted											
Skip stitch		1					1	1	2	4	09
Shading											
Thread tension									1		01
Stripe not match											
Up-Down		1	2			3	2			1	09
Up-even	1										01
Uncut thread	3	2	1	2	3	4	7	3	1		26
Label wrong place							2				02
Pleat		1		1		1				2	05
Oil spot											
Dirty spot	1		3	1	1						06
Rejects	3	5	3			1	1	1			14
Others											
Total check Qty	103	155	163	150	160	161	166	161	150	150	1519
Pass Qty	91	139	149	139	150	143	148	150	135	139	1383
Total defectives	12	16	14	11	10	18	18	11	15	11	136
Rejects Qty	3	5	3			1	1	1			14
DHU%	11.65	10.32	8.58	7.33	6.25	11.18	10.84	6.83	10	7.33	8.95%
QC pass%											91.05%

Table 3.13

Order No: 291448			Style No: RONNY				Color: GREY			
Buyer: SPORT MASTER							Date: 17-03-2018			
Defects Name	Hour									
	08-09	09-10	10-11	11-12	12-01	02-03	03-04	04-05	05-06	06-07	Total
Broken stitch			1	2				2	3		08
Drop stitch											
Needle hole											
Improper tuck											
Improper shape	3	2	2		2		1	1	2	2	15
Join stitch											
Label fault											
Open seam											
Puckering	3	2	3	3	2	1	1	1	1	5	22
Raw edge						1					01
Reverse											
Slanted											
Skip stitch											
Shading											
Stripe not match											
Up-Down	6	7	3	4	7	3	3	4	2	1	40
Up-even											
Uncut thread	3	2	3	2	3	3	4	2	2	1	25
Label wrong place											
Pleat											
Oil spot											
Dirty spot	1	1			3	2		1			08
Rejects	1							2			03
Others											
Total check Qty	171	170	200	200	200	210	190	206	170	185	1902
Pass Qty	154	156	188	189	183	200	181	193	160	176	1780
Total defectives	17	14	12	11	17	10	9	13	10	9	122
Rejects Qty	1							2			03
DHU%	9.94	8.23	6.0	5.5	8.5	5	4.73	6.31	5.88	4.86	6.41%
QC pass%											93.59%

Table 3.14

Order No: 291448			Style No: P33624				Color: GREEN			
Buyer: S.OLIVER							Date: 18-03-2018			
Defects Name	Hour									
	08-09	09-10	10-11	11-12	12-01	02-03	03-04	04-05	05-06	06-07	Total
Broken stitch										3	03
Drop stitch											
Needle hole											
Improper tuck											
Improper shape											
Join stitch	2	3	3	2	3	2	3		3		21
Label fault				1			1	2		2	06
Open seam											
Puckering							1				01
Raw edge	3	3	3	2	1	1	2	1	1	2	19
Reverse											
Slanted											
Skip stitch						3	1	2			06
Shading											
Stripe not match											
Up-Down	3	2	2	3	3	3	3	3	3		25
Up-even			3	2							05
Uncut thread	3	3	3	3	3	3	5	2	3	2	30
Label wrong place											
Pleat											
Oil spot											
Dirty spot		2	2		1		3	1	1	1	11
Rejects	1	2		1		2					06
Others											
Total check Qty	117	202	180	211	210	202	185	150	185	200	1842
Pass Qty	105	187	164	197	199	188	166	139	174	190	1709
Total defectives	12	15	16	14	11	14	19	11	11	10	133
Rejects Qty	1	2		1		2					06
DHU%	10.25	7.42	8.88	6.63	5.23	6.93	10.27	7.33	5.94	5.00	7.22%
QC pass%											92.78%

Table 3.15

Order No: AO-17-1354				Style No: P3366				Color: YELLOW			
Buyer: MOTHER CARE								Date: 19-03-2018			
Defects Name	Hour										
	08-09	09-10	10-11	11-12	12-01	02-03	03-04	04-05	05-06	06-07	Total
Broken stitch	1	2		1				1			05
Drop stitch											
Needle hole	3				2				1	2	08
Improper tuck	1			2		3	2			1	09
Improper shape											
Join stitch											
Label fault											
Open seam	4	1	2			1					08
Puckering	2		2		2	5	1	3	1		16
Raw edge											
Reverse											
Slanted											
Skip stitch			1					1		1	03
Shading											
Stripe not match											
Up-Down	4	1	1	3			1		1	1	12
Up-even											
Uncut thread											
Label wrong place		1	1	1			3			1	07
Pleat								5			05
Oil spot	1					1	3			1	06
Dirty spot											
Rejects	1					1					02
Others											
Total check Qty	150	155	148	160	180	175	152	180	200	200	1700
Pass Qty	133	150	141	153	176	164	142	170	197	193	1619
Total defectives	17	5	7	7	4	11	10	10	03	07	81
Rejects Qty	1					1					02
DHU%	11.33	3.22	4.72	4.38	2.22	6.28	6.57	5.55	1.5	3.5	4.76%
QC pass%											95.23%

Table 3.16: Summary of Reports (Aman Tex Ltd.)

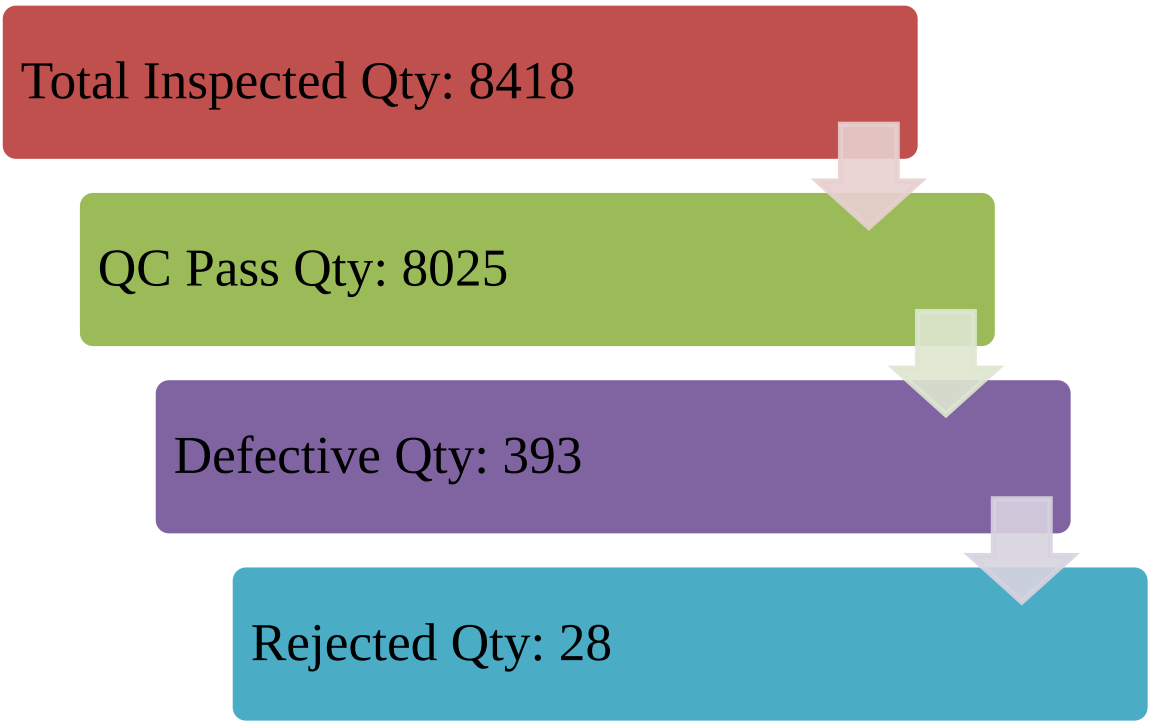
Date			Defects																		
Buyer		Inspected Qty	Broken stitch	Drop stitch	Needle hole	Improper tuck	Improper shape	Join stitch	Label fault	Open seam	Puckering	Raw Edge	Reverse	Skip stitch	Up-Down	Un-even	Uncut thread	Pleat	Oil/Dirty Spot	Others	Rejects
13-03-18	H&M	1653	13			13		09	05	12	17	05	10	04	22	03	26			19	03
14-03-18	SPLASH	1615	05					04		03		13	04	18	30	25	55				07
15-03-18	JACK&JONES	1519	05		03	01		22	03	04	04	20	03	10	09	01	26	05	06		14
17-03-18	SPORT MASTER	1902	08				15				22	01			40		25		08		03
18-03-18	S.OLIVER	1842	03				21		06		01	19		06	25	05	30		11		06
19-03-18	MOTHER CARE	1700	05	08		09			07	08	16			03	12			05	06		02
Grand Total		10231	39	08	03	23	36	35	21	27	60	58	17	41	138	34	162	10	31	19	35
			797 (7.79%)																		
	Defect %		4.81	1.01	0.38	2.89	4.52	4.39	2.64	3.38	7.53	7.28	2.13	5.18	17.31	4.27	20.33	1.26	3.89	2.40	4.40

Chapter: 4

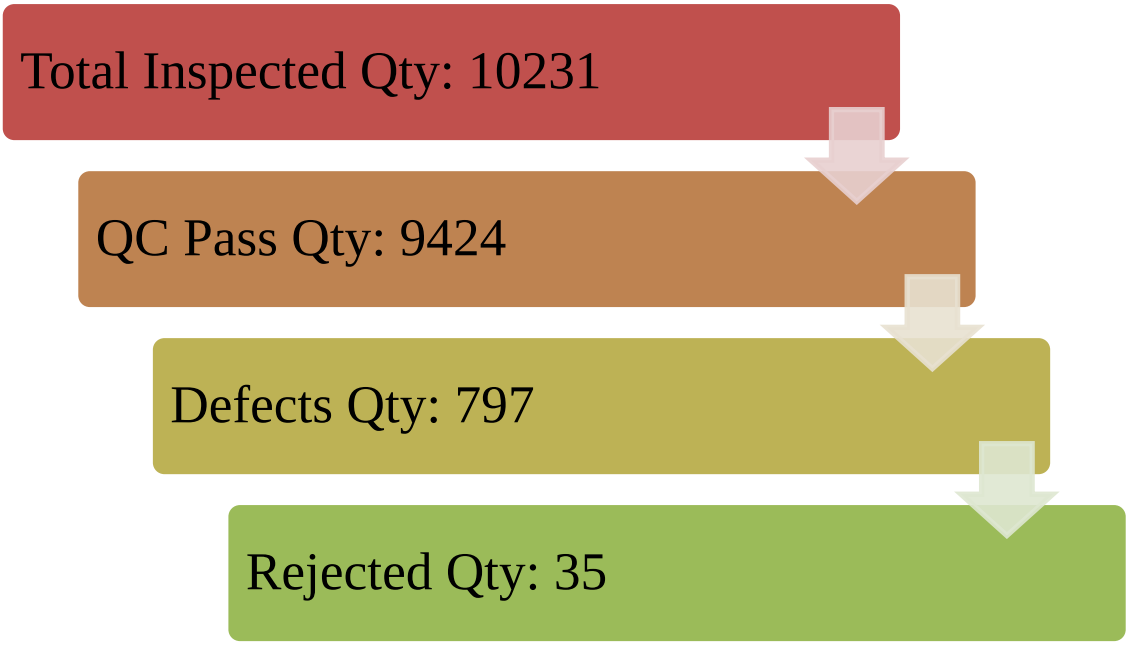
Results & Discussion

4.1 Results:

a) Suprov Composite Knit Ltd.

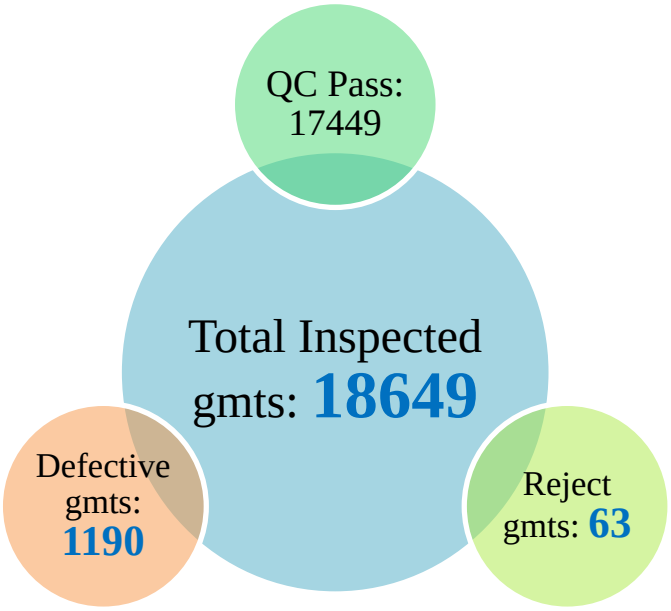


b) Aman Tex Ltd.



4.2 Overall Result:

In two industries we totally inspected 18649 pieces garments, 17449 pieces garments are get QC Pass, Defective garments qty 1190 pieces and only 63 pieces garments are rejected.

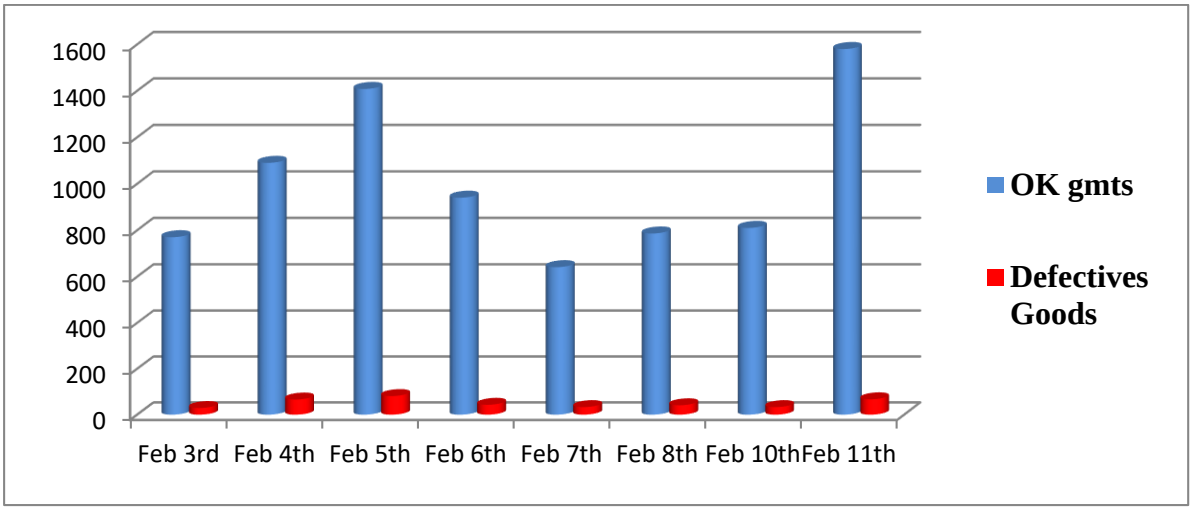


4.3 Sewing Faults Percentages Graphs:

We found different types of sewing faults in different days. Some faults are common, some are different. In here we comparison different types of sewing fault for “Suprov Composite Knit Ltd.” and “Aman Tex Ltd.” with different graph.

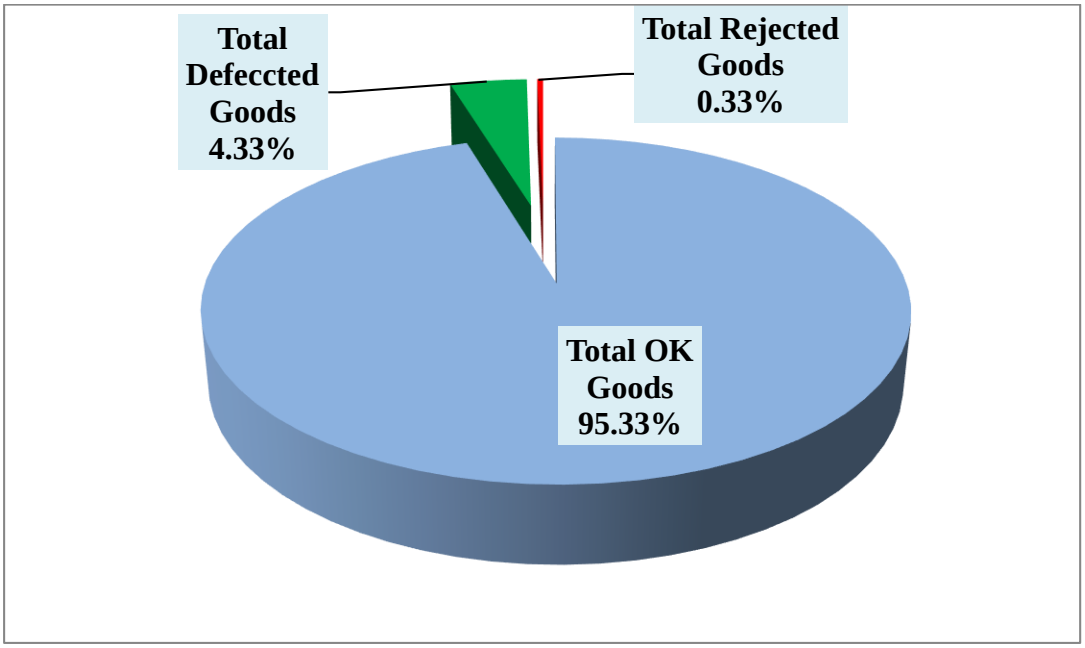
4.3.1 Day wise OK Goods-Vs-Defective Goods:

Here a comparison of OK goods and sewing defects quantity for "Suprov Composite Knit Ltd." are given below



Here, in this graph shows percentages of ok goods and defective goods for 8 working days. Blue color indicates "OK Goods" and Red color indicate "Defective Goods".

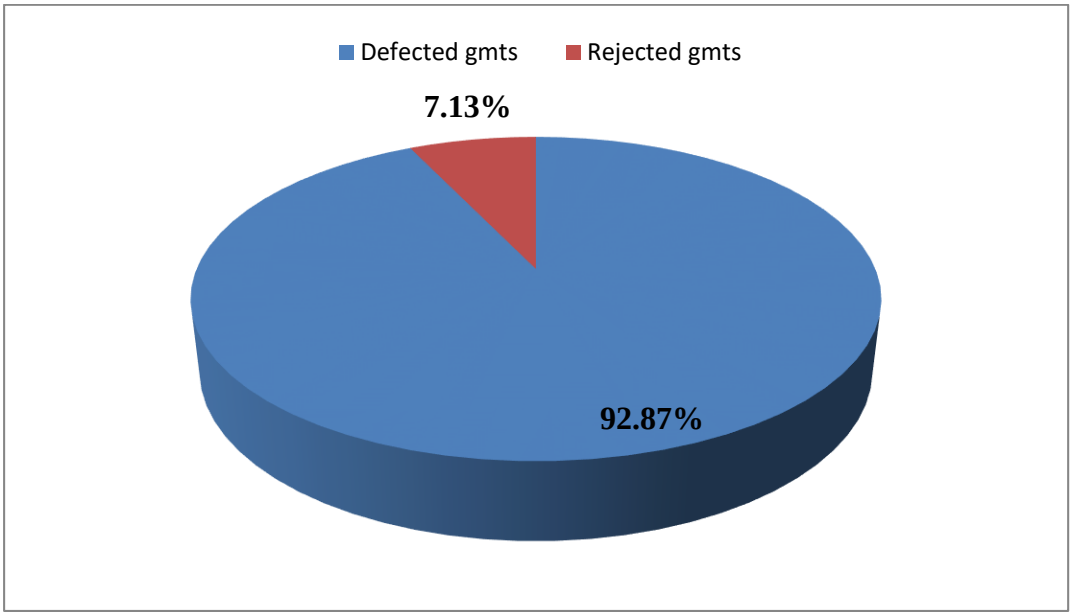
4.3.2 OK Goods, Defective Goods &Rejected Goods Percentages:



Blue color in this graph show percentages of "OK Goods", Green color shows Defected Goods percentages and Red color shows "Rejected" percentages.

In this calculation total OK goods is 8025, total defective goods 393, in where 28 are totally rejected, and 365 only defective, it will be recoverable.

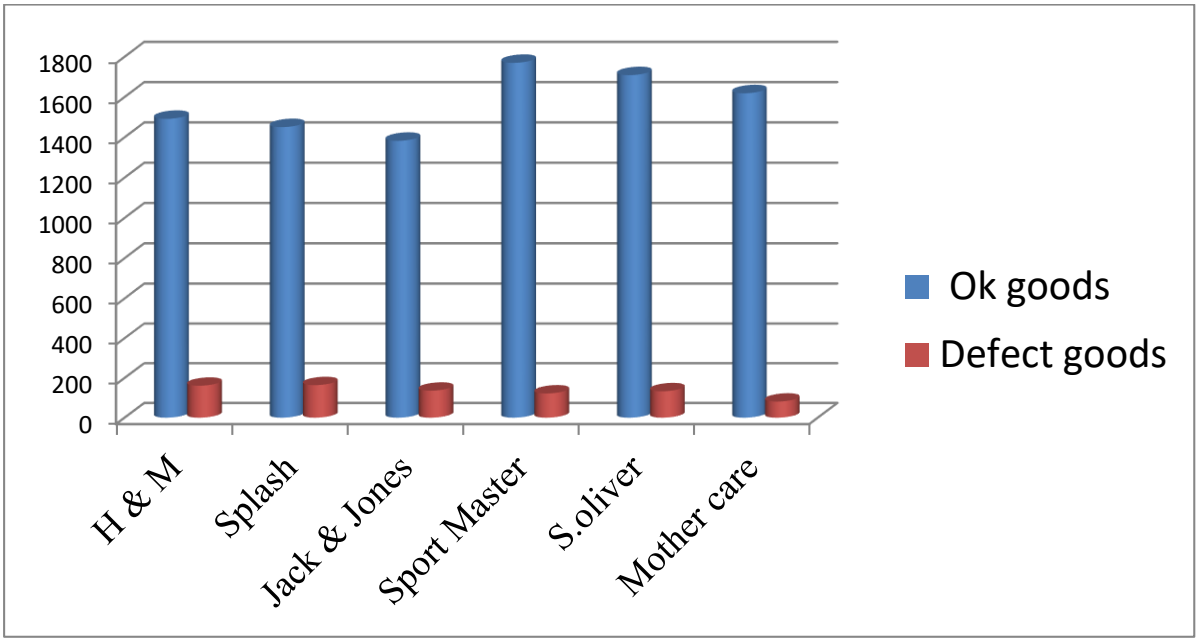
4.3.3 Defected & Rejected Goods Percentages:



In this graph Blue color shows total percentages of "Defected goods", other hand Red color shows Rejected Goods percentages inside the defective goods. In these calculation total defective goods 393, in where 28 are totally rejected, and 365 only defective, it will be recoverable.

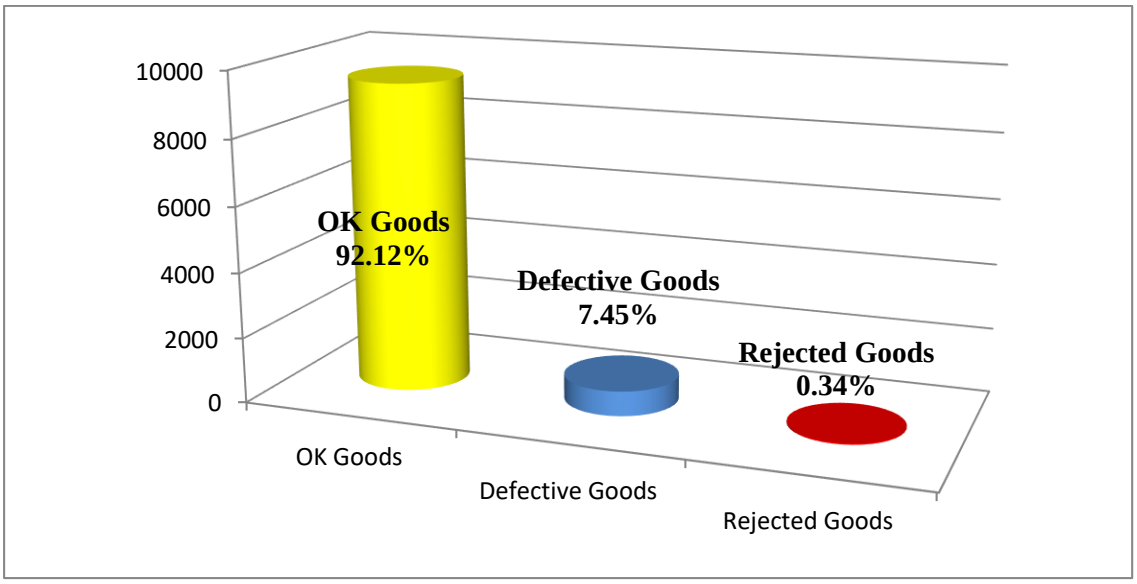
4.3.4Buyer wise OK Goods-Vs-Defective Goods:

Here a comparison of OK goods and sewing defects quantity for "Aman Tex Ltd." are given below



Here, this graph shows quantity of ok goods and defective goods for different buyer about 6 working days. Blue color indicates "OK Goods" and Red color indicate "Defective Goods".

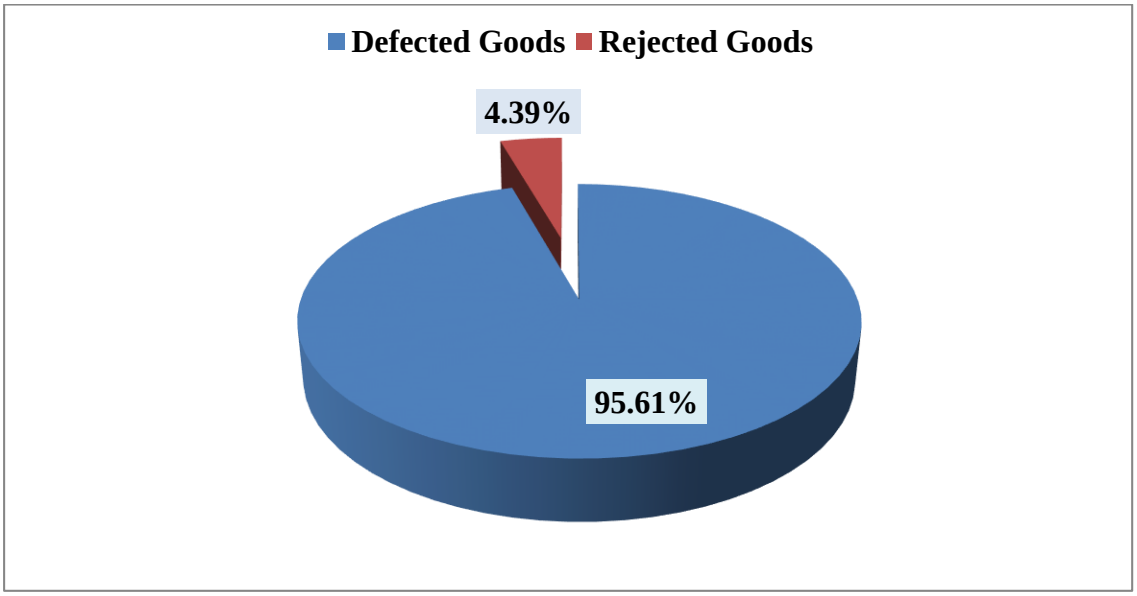
4.3.5 OK Goods, Defective Goods & Rejected Goods Percentages:



In this graph Yellow Color indicates OK Goods percentages, Blue color indicate Defective Goods percentages and Red color indicate Rejected Goods percentages.

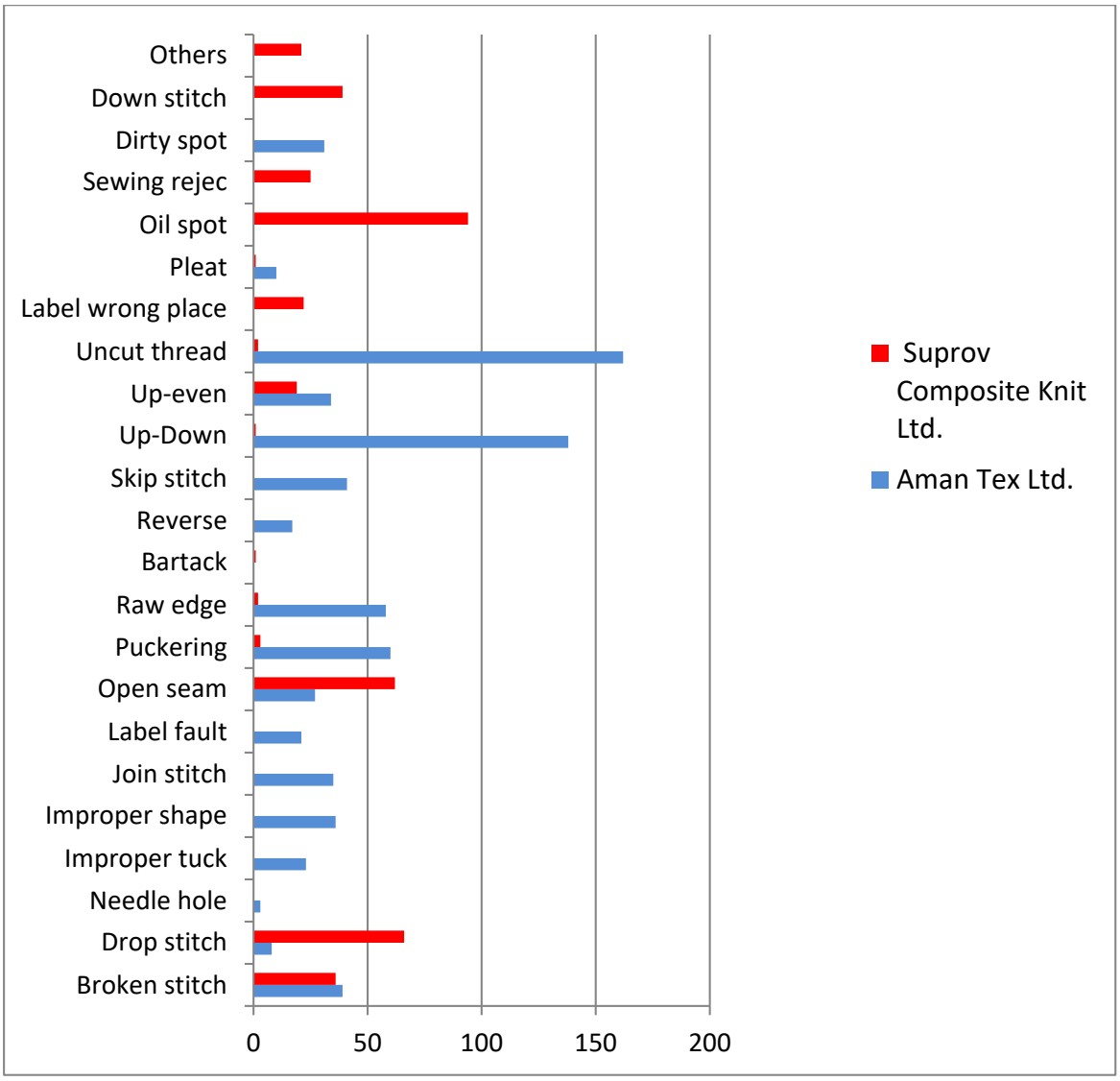
In this calculation total OK goods is 9424, total defective goods 797, in where 35 are totally rejected, and 762 only defective, it will be recoverable for again quality check.

4.3.6 Defected & Rejected Goods Percentages:



In this graph Blue color indicate Defected Goods percentages, other hand Red color indicate Rejected Goods percentages. In this calculation total defective goods 797, in where 35 are totally rejected, and 762 only defective, it will be recoverable.

4.3.7 Comparison graph of Sewing Faults between Two Industries:



This bar graph presenting amount the faults different that occurring in sewing floor during sewing operation of two factory in where we study and observed. Long bar show maximum amount of faults and short length show minimum amount of faults. Red color use for Suprov Composite Knit Ltd. and Blue color use for Aman Tex Ltd for comparison.

4.4 Discussion:

a) In Suprov Composite Knit Ltd. we observing& collected data for 8 working days in different line. In there we observed that, totally 8418 pieces garments are inspected, in where ok goods are 8025 pieces, defective garments are 393 pieces, in where 28 ate totally rejected, and 365 only defective, it will be recoverable.

b) In Aman Tex Ltd. we also observed and collected data for 6 working days in different line. In this industry we also observe that, totally 10231 pieces garments are inspected, and found that ok goods are 9424 pieces, defective goods found 797 pieces, in where 35 pieces are totally rejected and 762 only defective, which can be rectify.

Chapter: 5

Conclusion

From this project we have achieved our knowledge about how sewing is done, why faults are occurs during sewing, why sewing defects need to remedies & how those problems are minimize during production. We study investigated knitwear sewing process in ready-made clothing Enterprise, the reasons increasing quality faults and the priorities were determined for the improvement studies. Finally we found in total 6.38% of sewing faults. Various sewing faults detect as broken stitch, skip stitch, puckering, open seam and others. To enable a good quality system in enterprises, there should be adequate number of quality staff and the quality consciousness of workers should be increased. In this present condition garments industry are contributing to decrease unemployment problem in our Bangladesh. So here we can understand from this research that if we can decrease this kind of sewing faults then we can reduce our economical threats & increase our production. And our production will be quality full. Quality level should be constantly improved and for this purpose, regular trainings should be prepared in the enterprise.

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