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Faculty of Engineering

Department of Textile Engineering

REPORT ON

Industrial Attachment

At

MG Niche Flair Limited Unit-2

1335, Godnail, Bhuiyanpara, Shiddhirgonj, Narayangonj-1430

Course Title: Industrial Attachment
Course Code: TEX-442
13(A), Titas, Fall-2021

Submitted By

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This report we have presented in partial fulfillment of the requirement for the Degree of Bachelor of Science in Textile Engineering

Duration: From 1st October, 2021 to 31st December, 2021

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INDUSTRIAL TRAINING
Course Code: TEX-442

INDUSTRIAL ATTACHMENT

MG Niche Flair Limited Unit-2

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DECLARATION

We hereby declare that, this Industrial Attachment on **MG Niche Flair Ltd. Unit-2** of Bangladesh is done by us under the supervision of **Kamrul Hassan Bhuiyan, Coordinator & Lecturer,** Department of Textile Engineering, **Sonargoan University (SU),** Dhaka. We also declare that, this Industrial Attachment report has not been submitted anywhere for award, degree or diploma. We ensure that, any part of this attachment has been presented anywhere.

Md. Uzzal Mia

ID: TEX-1801013034

Nihar Roy

ID: TEX-1801013044

LETTER OF APPROVAL

This is to certify that **Md. Uzzal Mia, ID: TEX-1801013034, Nihar Roy, ID: TEX-1801013044,** B.Sc Engineering Textile program, 13A Batch have successfully completed their Industrial Internship on Apparel Manufacturing under my supervision. I do hereby approve their report. I also recommend accepting their report for partial fulfillment of Bachelor of Science in Textile Engineering (B.Sc) Degree.

.....
Kamrul Hassan Bhuiyan
Coordinator & Lecturer

Department of Textile Engineering
Sonargaon University (SU), Dhaka

ACKNOWLEDGEMENTS

All pleasure goes to the Almighty Allah who has given me the ability and strength to completethis project.

I am grateful to" **Kamrul Hassan Bhuiyan" Coordinator & Lecturer** of Sonargaon University(SU), Dhaka. Textile Engineering my Academic Supervisor. As well as to **"Md. Shahidul Islam'' G.M** of my factory of The **MG Niche Flair Ltd. Unit-2.**

Being working with them I have not only earned valuable knowledge but was also inspired by their innovativeness which helped to enrich my experience to a greater extent. Their ideas and way of working was truly remarkable. I believe this report could not be finished if they did not help me continuously.

I would like to thanks the Chairman, General Manager, Production Manager, Sample Manager, Finishing Manager, Dyeing Manager, Maintenance Manager, Quality control Manager, Factory Manager & Costing Sr. Manager of MG Niche Flair Ltd. Unit-2. Who has given us scope for doing industrial attachment in the factory as well as for giving scope to work in their respective section. We also would like to thanks **Senior IE "Noora Islam Siddiki"** for their proper management & taking necessary procedure about our industrial attachment.

I am also very much grateful to MG Niche Flair Ltd. Unit-2 Authority/Management for giving me opportunity to do my internship work in their factory. Last but not the least, thanks go to all the workers, supervisors, Line Chief and Floor in charge who have assisted, helped and inspired me to complete this task at various stages.

ABSTRACT

For any technical education, practical experience is almost equal important in association with the theoretical knowledge. By means of practical knowledge it's not possible to apply thetheoretical knowledge in the practical field.

Industrial attachment is the first step to professional life of student, especially of technical side. It's an indispensable part of study a practically running processing technology of an industrial unit for a student. University education provides us vast theoretical knowledge as well as more practical attachment, in despite of all these industrial attachment helps us to be familiar with technical support of modern machinery and skills about various processing stages.

This internship provides me sufficient practical knowledge about production management, efficiency, industrial management, Dyeing, Finishing, Costing, purchasing, inventory control, utility and maintenance of machineries and their operation techniques etc. which cannot be achieved successfully by means of theoretical knowledge only.

We were able to study on their different sections and their activities practically. Due to some limitation of the factory, we have found store section, finishing section and maintenance section, costing section dyeing section.

All the activities of this factory are performed according to the central orders of the company. This company works for Academy buyer.

During my internship we got the opportunity to study on some orders, from order receive to the delivery of the order. With the help of my supervisor, we have acquired the knowledge of handling an order, the production procedure and the inspection procedure to maintain the quality of these orders. We have also learnt about the office management of this factory.

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Chapter-1

Company Overview

1.0: Company Overview

Mohammadi Group is a renowned conglomerate in Bangladesh. The company started its operations in 1986 in the garments industry with merely 52 workers; today it employees over 10,000. The company has over the years diversified and excelled in Real Estate, Power Generation, Information Technology, Media & Entertainment. The company's latest endeavour, Nagorik Television launched at the beginning of March 2018.

MG Niche Flair Limited (Woven) is a 100% exported oriented garments factory of Mohammadi Group. The factory was established in 2016 with all the advanced technology, latest computerized machinery, and specialist technicians.

MG Niche Flair Limited is a 100% exported oriented Lingerie factory of Mohammadi Group. The factory was established in 2012 with all the advanced Technology, latest computerized machinery, and specialist technicians.

1.1: Company Profile

Name of the Factory	:	MG Shirtex Limited
BGMEA Reg No.	:	4098
Chairman of the company	:	Mr. Annisul Huq
Managing Director	:	Ms. Rubana Huq
Contact Person	:	Mr. Atiqul Haque Sarker, GM, Merchandising & Production Coordinator
Year of establishment	:	2005
Mailing Address	:	Lotus Kamal Tower – One, 10th Floor 57 Joar Shara C/A., Nikunja 2, Dhaka 1229, Bangladesh.
Factory Address	:	1315, Godnail, Bhuiyapara, Shiddhirganj, Narayanganj-1430
Telephone	:	Head Office: +88-02-48952704 Factory: +88-02-9264036 E-mail: MGSL@mohammadigroup.com
Number of employees	:	Male: 435; Female: 463; Total: 898
Number of machine	:	497
Total Unit	:	01 (One)
Floor	:	04 (Four) Floors
Floor Layout:		
– Ground Floor	:	Child Care, Doctor's Room, Workers canteen, Generator Room, Security Room
– 2nd Floor	:	Finishing Section, Inspection room
– 3rd Floor	:	Cutting
– 4th Floor	:	Woven Section (Shirt)
– 5th Floor	:	Woven Section (Long Paijama, Boxer)
– 6th Floor	:	Knit Section (Basic T-Shirt, Bra, Panty, Briefs, Boxer, Trunks, Jockstrap, Bikini, Thonj, Strings)
Number of Line	:	10 (Ten) Lines
Factory setup	:	i. Quality Control Section ii. Pattern & Sample Section iii. Fabric Inspection Section iv. Cutting Section v. Sewing Section vi. Finishing Section vii. Packing & cartooning Section

Banker's Name & Address	:	National Bank Ltd. Mohakhali Branch 9 Mohakali C/A, Dhaka. Swift : NBLBBDDH Phone : 9898639, 9899003
Product Range	:	Men's & Boys Dress and Casual Shirts, Ladies Blouses
Production capacity	:	3,70,000 pcs per month
Major Buyers	:	Sears, Wal-Mart, Costco, H&M, Primark
Special Features	:	Vacuum ironing table, Feed of the Arm, Placket Fusing machine, Collar forming machine, Cuff Forming machine, Kansai Special, Fabric Inspection machine, Collar notcher, Button pull test Machine, Shaddle Stitch machine, Pintect machine, Bottom cutting, maximum sewing machines are Auto-trimming and vertical trimmer

1.2: Different Division MG Niche Flair Ltd. Unit-2

Figure: Different Division MG Niche Flair Ltd. Unit-2

1.3: Site Direction of MG Niche Flair Ltd. Unit-2

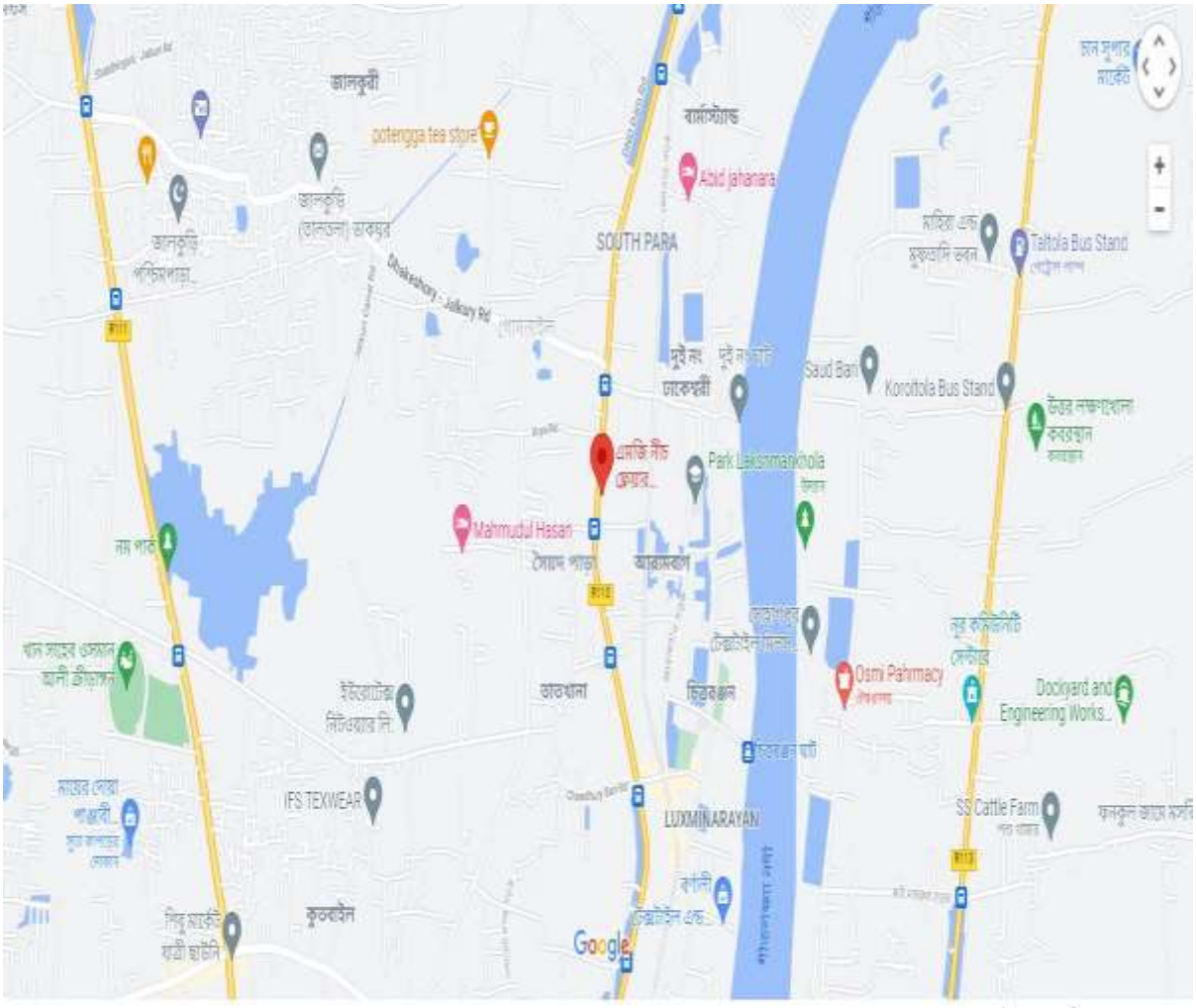


Figure: Site Direction of MG Niche Flair Ltd. Unit-2

1.4: Clients

X

COTTON JUICE collection

X

sfara

El Corte Inglés

eci™

SPRINGFIELD FASHION HOUSE
BE EMPOWERED

PRIMARK
The *Endless Summer* Fashion Show

1.5: Manpower Organogram

Figure: Manpower Organogram

1.6: Management System

The company has skilled administration, management and marketing team guided by proficient, dexterous & experienced leaders of offer right solution for the consumers with the right eminence & with the shortest lead-time for the export market in Bangladesh. The best use of continuous development of human resources by providing them International standard equal opportunity is the keys for achieving comprehensive competence in all level of the organizational hierarchy.

1.7: Shifting

There is one shift in the industry. So, the shifts are changed at every 8 hours. Shift Change/ for worker of Security:

General shift 08:30 am– 05:30 pm

1.8: Duties & Responsibilities of Different Post

Chief Executive Officer (CEO)

- ✓ To deal with the buyer and merchandiser.
- ✓ To set up price for the product.
- ✓ To plan apply and control all administrative functions.
- ✓ To follow up the instruction of managing director and chairman.

General Manager

- ✓ To supervise the personal working under him
- ✓ To plan the sequence of production.
- ✓ To arrange necessary raw materials for the production problems.
- ✓ To find out the possible reasons which are responsible for less production.
- ✓ To follow up the instruction of CEO as well.

Senior Production Officer

- ✓ Overall supervision of dyeing and finishing section.
- ✓ Batch preparation and pH check.
- ✓ Dyes and chemicals requisition issue and check

- ✓ Write loading/unloading time from machine.
- ✓ Program making, sample checking color measurement.
- ✓ Control the supervisor, operator, asst. operator and helper of dyeing machine.

Production officer

- ✓ To collect the necessary information and infrastructure from the previous shift for the smooth running of the section.
- ✓ To match production sample with target shade.
- ✓ To match production sample lot sample matching next production.
- ✓ To observed dyed fabric during finishing running and also after finishing process.
- ✓ To identify disputed fabrics and report to PM/Gm for necessary action.
- ✓ To discuss with PM about overall production if necessary.
- ✓ To sign the store requisition and delivery challenge in the absence of PM
- ✓ To execute the overall floor work.
- ✓ To maintain loading/unloading paper.

Shift in charge

- ✓ To follow the worker's movement.
- ✓ Should discuss with the production Officer about what is happening.
- ✓ To maintain the production sequence.
- ✓ To check the sample at certain time interval.

1.9: Production Division Sequential Flowchart

Chapter-2

History of Knitting

2.0: History of Knitting

Many people's favorite pastime, and so enjoyable too!

But, have you ever wondered who invented knitting and where the roots of the craft lie? Or the equipment used in the past?

Knitting, like many other craft hobbies, has a rich past, but an accurate and factual account is quite challenging to find.

I've presented what I could discover in a timeline. I learned so much from researching this. I hope you find something you didn't know too.

European Century: The Knitting Madonnas

From the Arabs, the art of knitting was introduced in Spain. It was used by the Catholic church in creating their liturgical garments and accessories. Among the earliest knitted masterpieces were two Arab-knit silk pillows that was found in the royal tombs of a monastery in northern Spain, dated in the 11th century.

Several paintings were made in the 1350's that portray Mary, the mother of Jesus, while she was knitting. It was called The Knitting Madonnas. One of these paintings is Madonna of Humility by Ambrogio Lorenzetti, showing Mary seated on the floor, knitting. Aside from

letting the history know the existence of knitting in the 13th century, this also depicts the rise of knitting as a home activity for women.

During the 14th century, this activity eventually reached the rest of Europe. It became one of the works of the highly skilled craftsmen. Knitting guilds were established in France in 1268, and in order to gain membership, one must pass all the tests to be given to them. W=ith the use of very fine yarns stitched with golden threads, these artisans have made gloves, pillows, and relic purses for the saints. They also knitted stockings, pouches, sleeves, girdles, and drawstring bags known as “pokes” (Nargi).

The 16th Century: Knitting in the United Kingdom

The purl stitch method was invented in the 16th century by the English knitters. It was used to knit stockings, a type of garment that was popularized as a powerful fashion trend for the Italian and Spanish men. King Henry VIII was the first British royalty to wear knitted stockings. It served as the blue jeans of today, establishing an elegant, fashionable look. Due to the high demand of this item, Queen Elizabeth I, the daughter of King Henry the VIII, encouraged the formation of knitting guilds. She also started using knit silk stockings and ornate knitted sleeves for her gowns during her reign.

Numerous distinctive styles in knitting also appeared in the British Isles. One of these is the cabling of a seaman's knitted sweater called the Gansey. (To see how Ganseys are made, click here.)

Another distinctive style is the Fair Isle knitting method, which first appeared in the Shetland Islands. The British Isles use this technique to create sweaters featuring two threads of different colors. The legendary past of Fair Isle occurred when Admiral Juan Gomez De Medina fled north in 1588. On the 17th of August that year, De Medina's ship wrecked on the rocks of Fair Isle. He wintered in Shetland together with his people, and there they have taught the islanders the art of knitting.

The world of knitting eventually developed and expanded as a trade. It was passed through nations by the European explorers and colonists during the industrial revolution. It was in 1589 that a machine for knitting was invented. The Englishman William Lee created the stocking frame or the knitting machine, the first ever device that imitates the hand movements of a knitter. It has 8 needles to the inch and only produces a coarse fabric. Later on, Lee improved the mechanism with 20 needles to the inch, and was able to knit stockings with silk and wool.

The Rise of Technology in the Art of Knitting

Several cities like the Nottingham became a major producer of machine-knitted fabrics. The land of Leicestershire and some of its neighboring countries also ventured in hosiery or the leg wear industry. With the growing number of demands in the market, the knitting machine manufacturers also increased not just in the production, but also in the development of the different types of machinery such as the circular knitting machine.

Knitting as a Voice for Nationalism

During the Revolutionary war, the young and old gathered together to sew and knit, as they show support for the patriots. The people knit their own garments to boycott British goods, showing their self-reliance and independence from the British. Martha Washington, George Washington's wife, is also a dedicated knitter. She summoned the wives of the high-ranking officials in the colonial army to sew and mend garments such as socks and uniforms for the troops.

Chapter-03
Cutting Department

3.0: Cutting Working Process Flow chart

Cutting plan based on shade band record
↓
Receive PO sheet, Tech pack, and other detail
↓
Fabric received from a store as per requisition
↓
Relax fabric if necessary with record
↓
Make a Marker to Determine consumption
↓
Marker and pattern Cross Check (ratio, grain line, jumping, etc.)
↓
Laying as per marker length (Spreading)
↓
Spreading quality control
↓
Random quality check on fabric fault & others
↓
A cutting (if necessary hand scissoring done during check fabric) and band Knife cutting (small panel such as single fly etc.)
↓
Cutting Quality control
↓
Randomly Panel check with hard pattern
↓
Panel check with CAD marker paper
↓
Layer numbering &bundling
↓
100% panel check
↓
Replace defective parts shade wise
↓
Ready cutting parts to input.
↓
Supply to Fusing & Sewing as per approved requisition & ratio

3.1: Functions of Cutting Department in Garment Industry

The cutting department is responsible for cutting fabrics and feeding the sewing department with cuttings. The cutting department's capacity is planned based on the daily feeding requirement of the sewing lines. The cutting department is set up with a cutting department head, cutters, spreaders, quality checkers and helpers for sorting, ply numbering and bundling. The activities of the cutting department are explained in this post.

Fabric Inspection:

When the fabrics are received from the dyeing and finishing section, it needs to be checked, because, faulty fabrics can be supplied from dyeing and finishing. But the cutting section has to check it. Otherwise the end products will be faulty. For this, the fabric is being inspected by the quality inspector of the cutting section. They check the fabric fully and find out the faults. Then mark it so that, these faulty portion of the fabric can be rejected during spreading and cutting. Then the fabric is being stored for relaxation.

Figure: Finished Fabric Inspection

Fabric Relaxation:

When the fabric comes from the dyeing and finishing, the fabric remains a slightly hot. In dryer, stenter and compactor heat is applied on fabric. So moisture is removed from the fabric

and it is not in actual condition. But if we keep the fabric in normal temperature and pressure for a certain time, the fabric absorbs moisture from the atmosphere and regains its original nature. This process is called fabric relaxation. Another cause of fabric relaxation is to maintain the dimensional stability of produced garments. When the fabric is being processed in different finishing machines, it goes under certain heat and pressure to give it proper shape. But when the heat and pressure is being withdrawn, the shape may change. So, if the dimension is became stabilized before cutting, no chance of strain in garments. So relaxation is very necessary before cutting.

Figure: Fabric Relaxation

Test Cutting & Approval:

After testing the fabric, if it is seemed that, the fabric quality is ok, and then test cutting is done. Here a little amount of fabric is cut and sewed in sewing section. Then the garments are compared with the approved sample. Sewing allowance and other measurements are also observed. If everything is ok, then the approval is given and the fabric is ready for bulk production.

Marker Making:

For industrial garments preparation, marker making is a very important chapter for highest usage of fabric and for lowest wastage of fabric. In Divine Textiles Limited there is a strong team working for marker making in cutting section of each floor. This is a process which is performed to draw the pattern pieces on the fabric before cutting. This may be done by drawing the pattern pieces on the fabric directly or by drawing the pattern pieces on a thin

marker paper and then placement the paper onto the fabric lay. So, we can define the marker as bellow. Marker is a thin paper which contains all necessary pattern pieces for all sizes for a particular style of garments in such a way that, fabric wastage would be least. The representation or drawing of the arrangement of identified garment pattern relevant to the cutting of a batch material. The marker is placed on the material and provides guideline for cutting. Marker may be on fabric or held in computer data files. Marker width is equal to the minimum fabric width and its length depends on the no of pattern sizes that will be drawn.

Preparations of Marker Making:

Before the marker making, some preparatory processes would be followed. In Divine Textiles Limited these processes are followed strictly:

- **Marking Grain Line:** Before marker making, the grain line of pattern and fabric must be marked.
- **Fabric Measurement:** Before marker planning, the fabric must be measured carefully. Because, marker width is relevant to the minimum fabric width.
- **Fabric Faults:** Fabric faults would be also under consideration. In a fabric roll, where any faults found, that points must be avoided for quality production and to least the fabric wastage.
- **Cutting Table:** Marker planner should consider the cutting table length before making marker. Marker length must be less than the cutting table length.

Methods of Marker Making:

There are two methods of marker making:

- **Manual method**
- **Computerized method**

In Divine Textiles Limited, manual method is used for marker making. Here marker is produced in two ways:

1. Marker drawn directly on fabric lay.
2. Marker drawn on marker paper.

Marker drawn directly on fabric lay:

This is the oldest and mostly used method for marker making. In this processes fabric is spreaded on cutting table and setting up all pattern pieces directly on to the fabric. Marking is done by chalk, pencil or pen. In order of this method, needs more time and experience.

Marker drawn on marker paper:

In this process marker is made on marker paper. All the pattern pieces are laid on a thin marker paper and drawn it. Then the marker paper in placed on fabric lay and used for fabric cutting. Before planning the marker, fabric length and width must be taken under consideration.

An analytical comment:

In this factory, manual method is used for marker making. The advantages of computerized method are given bellow comparing with the manual method:

Advantages:

- More suitable for large scale production than the manual method.
- Marker efficiency is higher than manual.
- Least wastage of fabric.
- Low production cost.
- Low labor cost.
- If required, print out of the marker could be got.
- Grading of the pattern could be done automatically.
- Few time consumption.
- Marker can be prepared quickly than manual.

Disadvantages:

- Initial investment is higher than manual.
- More skilled operator is needed than manual. I think everything has its positive and negative sides. But in comparison, the advantages of computerized marker are more than the manual. It increases the efficiency, workability and production of the factory. It saves valuable time and least fabric wastage. Thus saves money too. Moreover it attracts buyers with its modern facilities.

So, I think, it would be better to use computerized marker making system i.e. Computer Aided Design (CAD) instead of manual method. So the factory can think about it.

FABRIC SPREADING:

The appropriate type of spreading surface is determined by the fabric type, spreading equipment, cutting method, cutting equipment, and the firm's quality standards. Spreading requires a flat, smooth surface. If the spreading surface doubles as a cutting surface, it also must be level. Spreading and cutting may be done on the same surface, but automated cutting often requires spreading and cutting to be done in adjacent but separate locations.

Spreading and cutting surfaces are available in standard widths that correspond to fabric width. Narrow fabric can be spread on a wider table. A spreading surface needs to be about 10 inches wider than the fabric. Spreading tables may have tracks or rails placed along one or both sides of a tabletop or just a few inches off the floor. This track helps guide and control the spreader as it moves up and down the length of the table. With some types of equipment, the table tracks are geared to synchronize the movement of the spreading machine with fabric unrolling, in order to regulate tension.

Figure: Fabric spreading

Spreading tables may also be very specialized for certain types of fabric and cutting equipment. Pin tables have rows of pins located below the surface that can be extended through slats to hold fabric in a precise location for accurate matching of pattern repeats. Vacuum tables are used to compress lay-up and prevent shifting or movement during cutting. A spread is covered with a plastic film that forms a seal over the lay-up when a vacuum is applied. A lay-up of quilted fabric can be compressed as much as 75 percent when the

vacuum is used. This allows more plies in the lay-up and restricts the movement of slippery fabrics for more accurate cutting.

Cutting equipment may be moved to a lay-up as another lay-up is prepared further down the table, or fabric can be spread on one surface and then transferred to the cutting surface. Air flotation tables, when activated; allow easy movement of a lay-up onto an adjacent cutting area. A layer of air between the table surface and the bottom layer of paper reduces friction and allows a lay-up to be moved easily without putting stress on the fabric or the operators. Spreading tables with conveyor zed surfaces carry the fabric to the cutting machine so that no time is wasted. Ideally one lay-up can be cut while is being spread. Conveyors may be used with computerized cutting systems, large die presses, and laser cutters.

Garments Spreading Machines:

Figure: Automatic spreading Machine with fabric control devices

The fundamental purpose of spreading machines is to superimpose layers of fabric in a smooth, tension-free manner for accurate and efficient cutting. Manually operated spreading machines can be as simple a roll bar mounted on four wheels that is pushed up and down a spreading table by an operator. Manual spreaders travel only as fast as an operator moves them, while some of the faster automated machines can spread 100-150 yards per minute. Spreading speed can only be utilized on long spreads with few defects. Spreading speed may affect productivity, quality, and cost of the operation, but it should not be the primary focus for purchase of new equipment. Manual spreading machines may be used by small firms as the primary spreading device and by large firms for short spreads. As spreading machines

become more sophisticated, they are motor driven and have fabric control devices included increasing productivity, decreasing variability, and making spreading more cost-efficient.

Fabric control device during garments spreading:

Fabric control devices are mechanisms that control fabric as it is carried up and down the table:

(i) Tensioning mechanisms,

(ii) Positioning devices,

(iii) End treatment systems.

(i) Tensioning involves synchronizing the rate of spreading with the rate fabric is unrolled. A positive feed system utilizes a covered roller that is driven and timed to the movement of the machine. It prevents the momentum of a large roll from continuing to unwind when the machine slows down or stops. Roller covers of different materials may be used to give better gripping power for different types.

(ii) Positioning devices and sensors monitor position and control fabric placement during spreading. These devices improve the quality of a spread. Electronic edge sensors monitor selvages as fabric is spread. A deviation from the proposed alignment triggers a motor that shifts the roll to the correct position. Alignment can be held to one-eighth inch tolerance with these devices.

(iii) Width indicators may sound an alarm to alert the operator whenever fabric becomes narrower than the established width. Width variations are analyzed to determine where in the marker they fall, whether the fabric will still fit the marker, or whether the variation should be treated as a defect and removed.

(iv) End treatment devices are used with spreaders but are separate and placed at the end of the spread. The specific end treatment equipment needed depends on whether the spreading mode is face-to-face or face-one-way. A face-to-face spread utilizes an end catcher and folding blade that work together. These are mechanical parts, mounted at opposite ends of the marker to catch and hold the fabric as the blade shapes and creases the fold. An over feed device may be built into the spreading unit, which automatically feeds extra material when a fold is to be made. End treatments have a major impact on fabric waste. There must be enough fabric at the end of a lay to retain it in place.

FABRIC CUTTING:

After completing the fabric spreading then the fabric cutting is started. To cut out pattern pieces of garment components as per exact dimension of the patterns from a fabric lay is called fabric cutting. The term fabric cutting is only applicable for garments manufacturing technology. Fabric cutting should be done accurately as per exact dimension of the pattern pieces in the marker. Accurate cutting depends on methods of cutting and marker planning. If manual cutting method is used, then cutting accuracy depends on sharpness of knife, skill ness of operator, and attentiveness of operator. Computer controlled cutting and die cutting have their self-cutting accuracy.

During fabric cutting, the friction between the fabric and the blade produces temperature in the blade; the temperature may be up to 300°C. If the fabric contains synthetic fibers, e.g. nylon, polyester, acrylic or their blends, then fused edge may result in the fabric. As because most of those fibers melt at around 250°C. Therefore, sticking of cut edge of fabric will increase the fabric wastage Moreover, the fused edge after cooling will form hard bid, which will be problem of irritation during use of garments.

To avoid the problem of fused edge formation, the following steps may be taken

- ✓ Reduce the height of the lay;
- ✓ Reduce the cutting speed;
- ✓ Use anti-fusion paper in the lay at regular interval;
- ✓ Lubricate the knife during cutting.

Surface of the cutting table depends on methods of fabric cutting. The table surface should be capable to support the lay as well as to ensure that all the plies are cut at a time during fabric cutting.

Whatever the cutting method is used for fabric lay cutting, it should be ensured that the shape of the cut components from top to bottom lay are of exact size and shape, otherwise the garments produced will be defective.

Fabric cutting methods are as follows:

Manual Method	**Computerized Method**
Scissor	Knife Cutting
Round knife	water jet
Band knife	Laser cutting
Straight knife	Plasma torch cutting

Summary Working Procedure in Cutting Section:

- Follow production planning.
- Sample collect from sample section with pattern and garments approved.
- Lay order sheet/ratio sheet fill up by cutting section (fabric width, Item, Coloretc.).
- Lay order sheet fill up ok then send to cad section for marker making.
- Marker making ok.
- Fabric requisition from cutting section to store for cutting according to plan.
- Fabric is coming in cutting table as per marker and cutting plan.
- Fabric matches to trim card by merchandiser approved fabric width & length as per marker.

Figure-1: Straight knife cutting machine

Figure-2: Straight knife cutting machine

- Then layering starts manual & machines all fabric. Pocketing and interlining.
- After lay then spread marker upon on the fabric.
- Marker check by pattern in quality people.
- Keep all document make & style. Color. And size wise send report to store & sewing line.
- Before cutting cutter man attach clamp. Gum tap on the layer.
- If marker have drill mark then need to drill.
- Cutting start by cutter man.
- Then group and ratio wise stricken.
- As per lay order sheet make bundle chart and send to i.e. Section for bundle card printing.
- As per bundle chart wise numbering.
- Then panel check.
- If have any fault need to replace cut bundle roll and shad wise then bundle and send to line by input girl.
- If have any fusing, embroidery than send to this section.

When the cutting process is complete, the entire garment components are inspected for required production.

Spreading and Cutting Stage Problem:

Effect	**Cause**
Lack of Sufficient fabric Relaxation	Operators are not allowing sufficient time for relaxation
Too many no of plies during spreading	Ply height was found to be more than 7”
Excessive dragging during spreading	Higher dragging tension maintained between spreader roller to lay
Blunt knife edges	Edges of knife are not sharp and it leads to uneven shaping

Sticker Tagging:

After complete the cutting, the fabric is tagging by the sticker. The sticker tagging is an important part in this section. Due to fabric numbering or batching the sticker is tag on the cutting fabric surface.

Fig: Sticker Tagging for Batching

Bundling:

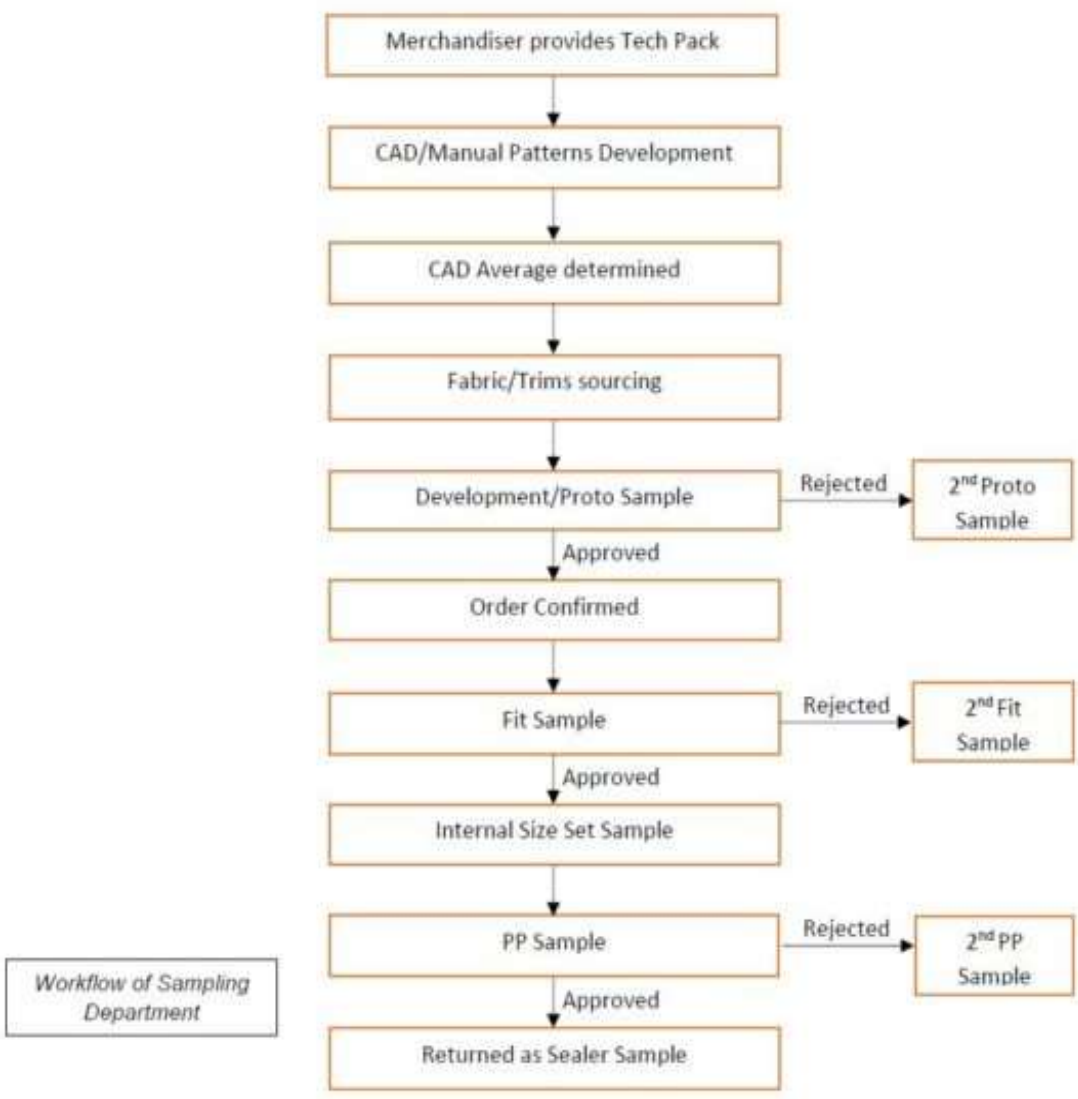
After cutting the fabric lay and tagging the sticker, all the garments components in stack form is shorted out as per size and color. To avoid mistake in sorting, it is better to use code number on each pattern. When bundling are complete, all the garment components are sending to the sewing section.

Chapter-4

Sample Section

4.0: Sample Department

Sampling is a very important process for a garment manufacturing industry. For this reason garments industries have a garment sampling department. For the confirmation of an export order, sampling plays a very important role. According to the condition of the sample made, buyer decides whether to give the order or not. Buyers require different samples at different stages of the process.



Workflow of Sampling Department

R&D

After the Sealer Sample is received from the buyer, the Production File is made containing the following:

• Tech Pack

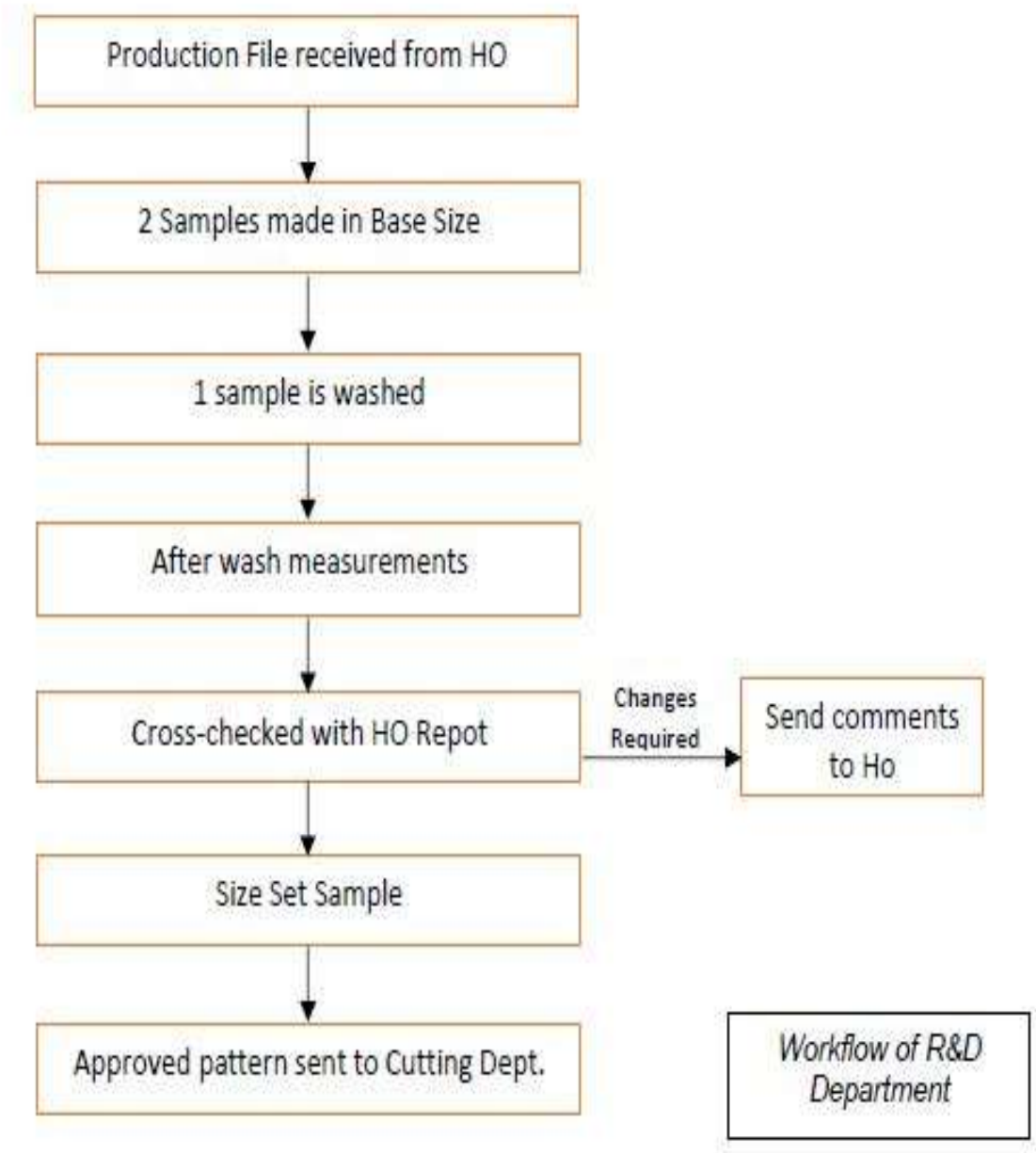
• Approved Pattern

• PP Sample

• Measurement chart

• Fabric & trims required

This file is sent to the Sampling (R&D) Department of the production unit. The unit produces two samples in the base size using the actual fabric and trims. If the unit requires any adjustments in making the sample, it informs the Head Office and the adjustments are incorporated in the CAD patterns.



Workflow of R&D Department

4.1: Basic flow chart of sample section

Brief sheet from buyer to Merchandiser

↓

Sample room

↓

Pattern making according to Brief sheet

↓

Fabric cutting according to pattern

↓

Print / embroidery (if needed)

↓

Sewing

↓

Quality check

↓

Finishing

↓

Send to buyer

4.2: Types of Samples

1. **Development/Proto Sample**

Proto Sample is the first interpretation of the tech pack. This sample can be made using substitute fabric, but having same content and gsm. This sample is made with the sole purpose of getting the style and look of the garment approved.

2. **Fit Sample**

   The fit sample is made to check the shape and fit of the style. It is made using the exact fabric and trims. After the buyer has approved the fit sample, the final pattern, fit and costing of the style is confirmed, and no further changes are made.

3. **Internal Size Set Sample**

   This sample is made to check the grading of the patterns as per the measurement chart given in the tech pack. This sample is not sent to the buyer.

4. **Pre-Production (PP) Sample**

   This sample is made using the exact fabric and trims and is packed in the same manner the final garment will be sent to the buyer. Two PP samples are sent to the buyer, one is kept with the buyer while the other sample is sent back as the Sealer Sample

5. **Sealer Sample**

   This sample is kept as a reference for production and hence, needs to be maintained until shipment.

6. **Size Set Sample**

   This sample is made to check the grading of patterns. 2-3 sample of each size are made.

7. **Top of Production (TOP) Sample**

   This sample is produced during bulk production after the line has been set. This sample is generally made after 40-50 pieces have been produced.

8. **Counter Sample**

   The samples are made from the actual fabric and actual trims.

Note: All the samples require fabric, Trims, Patterns, Tech Pack and measurement chart to be produced. All fabric and trims used in the samples undergo the process of preshrinking before use.

Apart from Internal Size Set Sample, all samples are sent to the buyer for approval. If the buyer requires some changes in the sample at any stage before PP Sample, it sends the comments in the revised tech pack. After incorporating all the changes, the sample is sent to the buyer again.

Further Process:

Fabric Store	•Consists of preshrunk fabric (around 50m)
Pattern Making	•Pattern made either using CAD or manually •CAD is used to determine average
Spreading & Cutting	•Maximum 3 plies •Scissors used to cut fabric
Embroidery	•Hand embroidery for attaching beads or glass items •Machine Embroidery (Chicken Embroidery)
Stitching	•One tailor produces the entire garment using different machines
Initial Checking	•Inspection of stitching of garment
Washing	•Done to remove any stains or dirt from the garment
Finishing	•Spotting, thread trimming
Final Checking	•Check stitching and look of the garment
Packing	•Pack the garment as required by the buyer

4.3: Sample section process

Artwork sheet is papers of from buyer with measurement, sketch & necessary instruction to make a sample of desired size & style.

- **Patternmaking:**
  It is a hard paper which is made by following all the specification of artwork sheet of each & individual components of a garment.
- **Cutting fabric:**
  Cut the parts of garment according to the shape of pattern. If parts of garment are not cut to correct shape, then the garment which is made by these parts should not be correct in shape. The accurate cutting of fabric depends on the sharpness of knife, skill need of operator & concentration of operator on his work. If required fabric will be sent in print shop or embroidery section after cutting fabric.

- **Sewing:**
  Joining gather of components of a garment that all involves in sewing in one form or another. There are a large number of different categories of sewing machine. Every category of sewing machine produces a specific type of stitch formation depending on the number of needles, loppers & threads which combine to construct the stitch.

3.4: Sample Section Activities

Merchandiser:

Merchandising means goods which are bought & sold. Merchandising means the activities of selling or buying of a product. The complete definition of merchandising is following on:

“All the activities involve in procuring an export order of a specific design of any garment of specific design of quality buying raw materials & accessories to produce the garment, process of production of garment, maintaining required quality level sign between two parties, to arrange shipment within scheduled time is known as merchandising.

Bring the order from buyer and developed the product, then merchandiser give the ordering product sample to in charge of the factory.

Duties of a Merchandiser:

- Store
- Swatch making
- Approval of swatch
- Meeting
- Planning
- Scheduling
- Production report
- Quality report
- Final inspection
- Shipment

In charge:

The factory in charge gives the ordering product to pattern master for making sample pattern.

- **Pattern master:**

  The activities of pattern are much more important. He makes the pattern very carefully. A well skilled pattern master is an asset for a factory. Actually, bulk production ordering is depending on pattern master activities.

- **Cutting supervisor:**

  After making the pattern, time to starting the activities of cutting supervisor. The person who cut the fabric according to pattern are called cutting supervisor. Then cutting supervisor sends the cutting fabric in sewing section for sewing the garment.

- **Sewing operators:**

  Sewing operator's activities are another most thing for a garment. All skilled sewing operators give the factory timely shipment. In sewing section, operators are sewing the fabric according to cutting and give the actual product shape.

- **Quality inspector:**

  After finishing all type of sewing the product send to the quality inspector check the product very carefully. Various types of spots, threads which are not sign for better quality of products are removed by the quality inspector.

- **Ironing:**

  In this section, products are finishing by the ironing. The iron operators do his work very carefully because he needs to avoid the over pressing on the fabric.

- **Final quality inspector:**

  After finishing the ironing, the products send for the final inspection for quality check. In this section, the inspector checks the measurement of all side & compares the measurement with buyer requirement measurement.

- **Packing & send to buyer:**

  After finishing all types of inspection, the products send for packing section for packing. Then finally the products send to buyer for approval.

Chapter-5

Garments Merchandising

5.0: Merchandiser

An individual who is associated with merchandising activity is called a merchandiser. The merchandiser synchronizes with the design team to successfully exhibit the product. He or she creates colors and specifications and carries out the market research to decide the most effectual ways to sell and promote the product

Two type of merchandising done in garment exports

- Marketing merchandising.
- Product merchandising.

5.1: Qualities of Merchandiser

- **Planning capability:** Merchandiser must be competent enough to plan the activities based on the order that is to be followed. Otherwise, it will directly affect the delivery time of the order.
- **Decision making:** It is a very important quality required for the merchandiser to deliver the product on time to buyers.
- **Communication skills:** Oral as well as written communication are important to endorse the business activity as well as to have a good relationship with the buyers.
- **Loyalty:** It is a crucial character of human beings, particularly for businesspersons.
- **Technical knowledge about the field:** The merchandiser must have ample knowledge about the garment production activities, and technical knowledge to communicate with different levels of persons in the apparel industry.
- **Coordinate and cooperate:** The merchandiser is the person who coordinates with the various departments in an apparel industry to get the job done.
- **Monitoring ability:** He or she must supervise the various activities in different departments to speed up the orders to dispatch it on time to the buyers.

5.2: Flow Chart or Sequence of Merchandising

Receive order from Buyer

(Sketch or picture, measurement chart, material details)

↓

Consumption

↓

Costing

↓

Negotiation with Buyer

↓

Order receiving

↓

L/C receiving

↓

Back-to-back L/C opening

↓

Sample developing and Approving

↓

Approval for bulk production

↓

Related work to production planning

↓

Start bulk production

↓

Line inspection

↓

Final inspection by Buyer

↓

Shipment to Buyer

5.3: Components of Cost of Garment

In continuation of the other functions Production merchandiser is also required to do the costing of the product. The costing is done by keeping in mind the cost of the various raw materials, operating cost of the company, the competition and expected profit of the organization. At the same time, it is necessary to keep in mind the buyers costing expectations.

The components on which cost of garment depends is as follows:

- ✓ Fabric
- ✓ Trims
- ✓ Cut Make &Trim charges
- ✓ Value added services: printing, embroidery, washing, applique
- ✓ Testing of the garment
- ✓ Quality
- ✓ Transportation and logistics cost
- ✓ Profit of the manufacturing organization

All these components of garment cost depend upon certain parameters which drastically affects above cost parameters. These parameters play vital role when production merchandiser does the costing of garment; as these parameters are very dynamic and keep fluctuating frequently.

The parameters that affect the garment cost mostly are; Unit of Measurement, MOQ, Inco term decided between raw material vendor and garment manufacturer, order quantity, etc.

Fabric:

Fabric is generally the most significant factor in costing of garment. Fabric accounts for 60 to 70% of the total cost of basic-styled garments. In many cases, evaluating the quality and the quantity of fabric consumed in the garment indicates better than any other factor the cost of producing it. The cost of fabric depends upon the type of fabric is going to be utilized in the garment. Types of fabrics are

- ✓ Woven fabric
- ✓ Power loom automatic loom fabric
- ✓ Fiber/yarn/fabric dyed fabric
- ✓ Fiber content of fabric i.e., cotton, wool, polyester, silk, blended fabricate.
- ✓ Type of dyeing and finish used
- ✓ GSM/Weight of fabric.

5.4: The Parameters That Affect the Fabric Cost

UOM: Unit of Measurement (UOM) is a quantity used as a standard of measurement. The Unit of Measurement for woven fabric is normally in meters or yard, while knitted fabric measured in Kilograms or some time it is in yards also. Merchandiser should aware of unit of measurements while finding out the cost of fabric. Sometimes buyer specifies the UOM of fabric.

MOQ: Fabric Minimum Order Quantity (MOQ) is nothing but the smallest quantity of a product that a fabric manufacturer can supply. The MOQ depends on the type of fabric and on capacity of vendor. The MOQ plays the important role while ordering the fabric as it directly affects the cost of garment. If the order of fabric is below the estimated MOQ then vendor charges more cost as compared to regular charges. Merchandisers need to keep the MOQ in mind while doing the costing of small quantity orders.

Order quantity: The cost of fabric may vary with the order quantity, more the order quantity; cost of fabric can be optimized till certain level. But this is again depending on the type of fabric required and fabric manufacturer capacity along with negotiation between fabric buyer and supplier.

Incoterm used: This factor makes the huge difference in fabric cost. While importing the fabric from another country merchandiser need to deal with the supplier for delivery of the fabric on the basis of incoterms like EXW, FOB, CIF, DDP etc. based on which it will be decided that who will bear the cost of transportation and risk. No matter which incoterm is used but all the cost needs to be charged to buyer. If fabric is getting purchased by using EXW incoterm, then merchandiser needs to add the transportation cost along with the custom clearance charges along with the price of fabric while calculating the garment cost.

The cost of fabric can be calculated by following way:

Yarn cost + fabric manufacturing cost (knitting or woven) + dyeing cost + finishing cost= total fabric manufacturing cost

Dyeing cost indicate that if fabric is yarn dyed or fiber dyed or piece dyed respective cost will be added depending upon fabric type. Finishing cost included heat setting cost, normal finishing, compacting (knitted fabric) etc.

4.5: Trims

Trims include all materials other than fabric used in the garment. For example, most garments have accessories such as threads, buttons, zippers, labels, elastics and miscellaneous items. Quality and quantity of trim and labor required to apply it on garment are directly related to cost of garment. The different trims have different UOM; even same trim can have 2-3 different UOMs that can be summarized as-

4.6: UOM of Various Trims used in Garment

Trims	UOM
Thread	1000-meter tube, 2000/5000 Meter Cone
Labels	Unit
Zippers	Unit
Buttons	Gross (144 Units)
Polybag	Unit, thickness is measured in mm. or gauge
Carton	Unit
Hand tags	Unit
Shanks	Gross
Rivets	Unit
Lace	50 Meter
Hanger	Unit
Tapes / Velcro	50 Meter or Kg.
Elastics	50 Meter

Other factors that need to consider while calculating the trims cost is MOQ, order quantity, lead time and quality of raw material used to make the trims.

Thread: After fabric, thread is another component which needs to be considered for calculating the cost of garments most. The consumption of thread is calculated by IE department. It is dependent upon the type of seam and SPI. While ordering the thread the

operation break down and number of sewing M/c for that particular style should be taken in account. Accordingly, number of cones of thread needs to order. In order to calculate thread consumption special software's are also available which gives the accurate thread consumption.

Sometimes thread can be computed as while preparing the sample, initial weight of thread cone is measured and after preparation of sample again weight measured. The difference of weight gives how much thread is consumed and converting it into meters will give actual thread consumption for that garment. While ordering thread it's important to consider the wastage, normally which is 10-15%.

Labels: Several labels are used in garment i.e., main label, care label, content label, the cost of label depends upon make of label i.e., fiber content, printed, jacquard label, size of labels, colors used in label, etc. for a unit garment label cost may not play a significant role but in case of mass production it plays vital role. The other factors that are important while ordering the labels are MOQ, order quantity.

Zipper: zippers also have several types like metallic zipper, nylon zipper etc. which plays the drastic role in cost of zipper. Merchandiser should be aware of the parameters of zipper for accurate costing and negotiation. MOQ is the parameter which affects the cost of zipper considerably; at certain MOQ only zipper will get at desired price.

Buttons: Buttons can be made up of different types, nylon buttons, plastic buttons, acrylic based buttons, wood, shell, metal. Every type of button has its own MOQ decided by manufacturer of button. Buttons are purchased on gross with the line specified.

1 gross = 1 packet =144 buttons= 12 dozens

Poly bags: The cost of poly bag is highly dependent on thickness, dimension and raw material used. The poly bag ordered in terms of number of pieces. The cost of poly bag is equally important as it give significant difference when we consider the whole order quantity.

Cartons: Same as poly bag cost of cartons are highly dependent on material used and dimensions. Depending upon these factors cost of cartons is decided, the UOM of cartons generally is number of pieces while cost varies with MOQ. These are procured based on the number of plies, dimensions of the carton and GSM of the paper used to make the carton. Generally, the number of plies used in carton box is 3, 7 and 9 plies. For example: 9 ply, 60 X 40 X40, 4 side calico, 1 side print and 180 GSM.

Hand tags: Hand tags or price tags are used as packing material, the cost of hand tags is dependent upon material used, printing on it, and MOQ.

Hangers: Hangers are made up of generally hard plastics sometimes wood, the cost of hanger is depending on material used, size, print and color on it. Generally transparent hangers are more costly than colored one.

Taps and Velcro: Tapes are purchased based on the width and mobilon tapes are purchased in kg. Thus, increase in width by 100% increases the cost by 80%. For satin tapes increase in width by 150% increases the cost by 250%. Another factor that affects cost is MOQ.

Trims charges are generally calculated as for the different type of sourcing and mode of transportation.

- If shipment is by air then the trim cost + 15-25% more cost is quoted to buyer, depending on the freight charges
- If shipment is by sea, then trim cost + 10-15% more cost is quoted to buyer depending upon freight charges
- If domestic sourcing is there then, the local taxes. Transportation charges is bound to add in the total trim cost

These additions are done by merchandiser, depending up on the business outlook. Other charges included during the costing by merchandiser

Charge Table

Charges	In %
Rejection and wastage	2-5 % (depending upon order quantity)
Commission on foreign exchange	2-3%
Commission of buying house (if applicable)	1-1.5%
Transportation charges internally	1-2 $/ garment
Margin (decided by marketing department by looking business scenario.	10-15%
Testing inspection charges	1-2%

	Items	Consumption	UOM	Rate ($)	Amount ($)	Remarks
1	2/60s single jersey	0.224	KGs	6.5	1.45	
2	Cuff and collar ribs	0.08	KGs	5	0.4	
3	Sewing thread	150	Meters		0.08	approx.
4	Buttons	3	Gross		0.04	approx.
5	Main label	1	Unit		0.02	approx.
6	Care label	1	Unit		0.02	approx.
7	Hang Tags	1	Unit		0.06	approx.
8	Price Tags	1	Unit		0.04	approx.
9	Poly bags	1	Unit		0.02	approx.
	Total Cost				2.13	

5.7: CMT COST

Cost of Making:

The cost of making done "in house" is based on the total cost per hour multiplied by the number of hours it takes to make the style and divided by the number of units produced if the making is done by a contractor; the contractor adds profit this amount.

Labor cost per minute = (Monthly salary of an operators/Total minutes available in the month) at 100% efficiency

CM cost = (SAM of the garment * Minute cost of the labor)/Line efficiency (%)

Value added services:

This is cost added to of special process like embroidery, printing, washing used to impart the type of look buyers wants. These are associated cost of garment manufacturing are wet processing chemicals, washing and contracted operations.

Wet processing chemicals include bleaches, detergents, softeners, neutralizers, wetting agents and resins. Complicated wet process finishes contribute a significant amount to the price of a product. Merchandiser must know in detail about each of these operations, sourcing,

contracting requirement and time involved. Cost of these varies depending on different styles. For example-Embroidery costing require derivation of thread consumption, additional cost of hand embroidery is involved etc. printing cost is dependent on no. of colors for printing, MOQ, and type of print.

Example of garment costing:

The example of garment cost is given by assuming the following dimensions for polo neck T-shirt, no. of pieces = 4000, salary of the operator =6000 Rs./month=120$/month no. of working days = 26, line efficiency considered= 50%, sewing SAM= 15 min., Cutting SAM= 7 min. 1$=50INR

Chest = 60 cm, Length (HSP to waist) = 75 cm, Sleeve length = 25 cm

Fabric used is 2/60s 100% cotton S/J fabric. GSM is 180

The fabric consumption can be calculated as

= (75 + 25 + 2) X (60 +1) X2X 180/10000

= 0.224kg + 0.08(weight of cuff and collar)

CMT charges are calculated as:

Total available capacity per month (in minute) = 26 working days*8 hours/day*60=12,480 minutes

Labor cost per minute = (Monthly salary of an operators/Total minutes available in the month) at 100% efficiency

= 6000/12480

=0.480 Rs.

Sewing cost = (SAM of the garment * Minute cost of the labor)/Line efficiency (%)

=15* 0.480/50

=0.288$

Cutting cost = (SAM of cutting * Minute cost of the labor)/cutting efficiency (%)

= 7*0.480/50

=0.134$

Trimming cost is considered as 0.06$as it depends upon how many operators are there for trimming.

Production cost of garment (CMT) = sewing cost+ cutting cost + trimming cost

= 0.288+0.134+0.06

5.8: FOB Cost of Garments

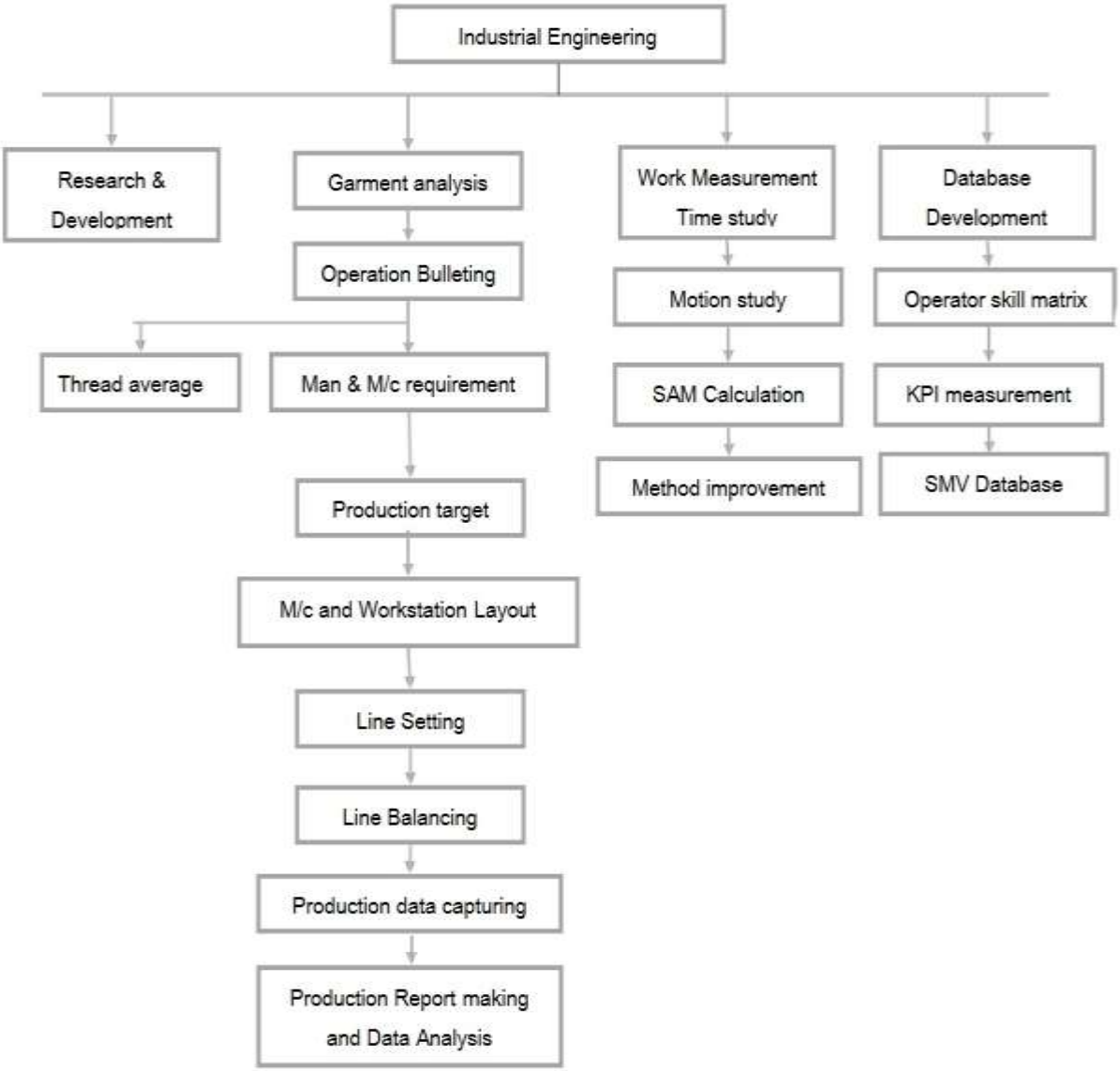
FOB cost

Fabric cost + 7% duty	1.97$
Trim cost + 7% duty	0.3$
Fabric and trims transportation charges	0.06$
Testing + inspection charges	0.2$
Commission on foreign exchange	0.08$
Buying house commission	0.16$
Rejection 5%	0.16$
Value addition services	0.2$
CMT	0.482 $
Margin	0.5$
Total FOB cost of garment	4.11$

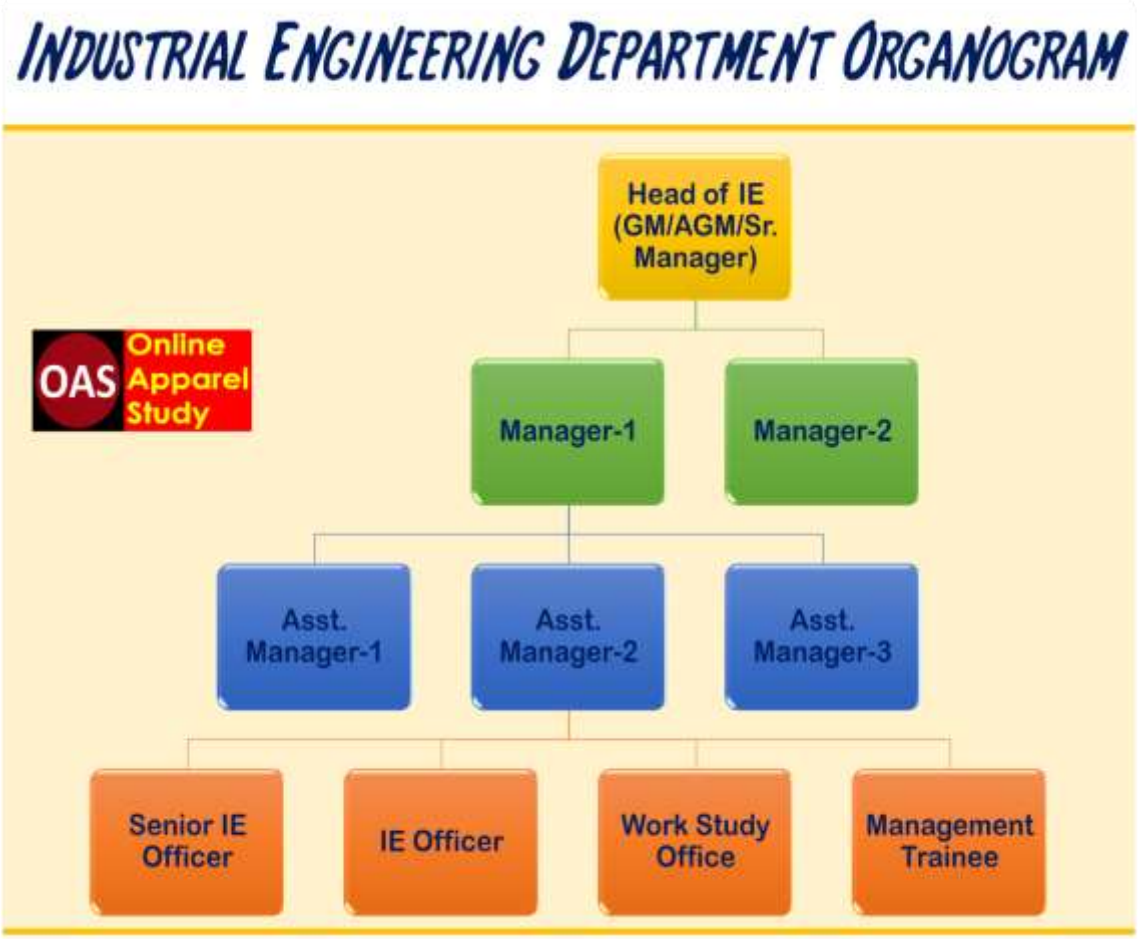
Chapter-6

Industrial Engineer (IE)

6.0: Process Flow Chart of Industrial Engineering (IE)



6.1: IE Organogram



6.2: All the above processes are discussed in the below

SL No.	Process	Procedure
01	Negotiation with garments merchandiser	It is the very first work of an industrial engineer. Here, he should vastly discuss with garments merchandiser about the in-coming garments product.
02	Garment's analysis	Confirmed garments product is clearly analyzed here by industrial engineer. It helps to complete rest of the processes very easily.
03	Make P.P meeting	Here, P.P meeting should be organized if all the required fabrics, trimmings and accessories are in housed and take all the pre-cautions for the up-coming garments production.
04	Production target	Production target should set here according to factory capacity. It helps to respect the shipment date.
05	Set machine layout	layout is set here according to total processes needed to complete a garment item.
06	Line setting	In this process, actual line setting should be done to utilize the garment workers properly. If it takes more time in line setting, then garments production will be decreased.
07	Line balancing	To minimize the number of workstations, cycle time, line balancing is done here. It's a very important process to achieve desired production target.
08	Continuous production meeting	Production meeting should be done here at regular interval. If any problem will arise during garments production, should take necessary actions to solve that.
09	Collecting production data	hould be collected here for preparing production report.
10	Preparing production report	Here, total garments production report has prepared to analysis about the whole production.
11	Production report analysis	n report is analyzed here from different points of view.
12	Report submits to factory manager	Finally garments production report must submit into the factory manager.

6.3: Line Capacity-1

Date	20.10.2021	Factory	MGNFL-Knit	Total Obs Time	#REF!	Input date	18/10/2021
Buyer	Hiperce	Section	Sewing	Total CC Time (Effective)	#REF!	Graph #	2nd
Style	(S198501200)	Line	1	Total M/c Cont. Time	#REF!	Previous G/date	N/A
Observer	Md. Rabbi Hasan	Item	Long Trouser	Total Non M/c Cont. Time	#REF!	SMV	16.56

TACCT	#REF!	Number of Workers	44	Worker Performance %	#REF!
BPT(Basic Pcs Time)	#REF!	Worker Potential Pcs/hr	#REF!	Productivity Gap	#REF!
HPT(Highest Pcs Time)	#REF!	Worker Potential Pcs/ 10hrs	#REF!	Planed Peak Efficiency%	60%
LPT(Lowest Pcs Time)	#REF!	Current Pcs/hr	200	Planed Current Efficiency%	40%

SL NO	OPERATOR NAME	ID NO	OPERATION NAME	M/C Type	CYCLE TIME 1	2	3	4	5	Worker's Wise LE TIME(Sec)	Avg.Cycle Time (Min)	Allowance-15%	S.M.V	CAPACITY PER Hr	CAPACITY In proces
1	Nayan	956	Lower fly join T/S	SNLS	23	22	23	21	24	22.60	0.377	1.15	0.43	139	139
2	Reba	785	Uper fly join T/S	SNLS	23	23.5	25	26	25	24.50	0.408	1.15	0.47	128	128
3	Rohima	119	Fly rolling	SNLS	18	19	17	18	17	17.80	0.297	1.15	0.34	176	176
4	Parven	667	Mouth end tack	SNLS	21	22	21	22	21	21.40	0.357	1.15	0.41	146	146
5	Popy	627	Mouth elestich tuch	SNLS	24	23	24	25	23	23.80	0.397	1.15	0.46	132	132
6	Nasma	693	Waest belt mouth close	SNLS	23	24	23	23	24	23.40	0.390	1.15	0.45	134	134
7	Sefa	189	Front rise O/L	O/L	19	18	20	18	19	18.80	0.313	1.15	0.36	167	167
8	Hossain	665	Fly Jatise	SNLS	20	21	22	21	20	20.80	0.347	1.15	0.40	151	151
9	Sume	294	Fly box	FL	16	17	15	15	16	15.80	0.263	1.15	0.30	198	198
10	Salim	283	High T/S	O/NL	25	26	26	24	25	25.20	0.420	1.15	0.48	124	124
11	Airin Sumiya	44	Pocket join	FL	40 52	42 53	39 51	42 52	40 53	40.60 52.20	0.677 0.870	1.15 1.15	0.78 1.00	77 60	137
12	Halima	725	Pocket 1/4 T/S	SNLS	25	26	24	25	25	25.00	0.417	1.15	0.48	125	125

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13	Sufia	204	Pocket 1/4(side)	SNLS	26	25	24	25	26	25.20	0.420	1.15	0.48	124	124
14	nuraja		Pocket O/L	O/L	29	30	28	29	28	28.80	0.480	1.15	0.55	109	109
15	Bilkis Lovly		Pocket Tuck.B	SNLS	49 48	50 49	51 47	49 48	51 50	50.00 48.40	0.833 0.807	1.15 1.15	0.96 0.93	63 65	127
16	Babu		Back rise	FOA	19	17	19	18	16	17.80	0.297	1.15	0.34	176	176
17	Rojina Farjana		Side seam	O/L	52 48	55 49	54 50	52 51	51 50	52.40 49.60	0.873 0.827	1.15 1.15	1.00 0.95	60 63	123
18	Dinaj	266	Side seam T/S	FOA	31	32	32	33	33	32.20	0.537	1.15	0.62	97	97
19	Lita	13	Lebel tuck	SNLS	11	10	11	12	12	11.20	0.187	1.15	0.21	280	280
20	Sefa	189	Hole	Hole	31	31	29	30	32	30.60	0.510	1.15	0.59	102	102
21	Rafiq	760	inseam	FOA	27	28	27	29	30	28.20	0.470	1.15	0.54	111	111
24	Shaheta	161	Waes belt tuck	LS.1	22	23	24	22	23	22.80	0.380	1.15	0.44	137	137
25	Rubel	158	Waest belt T/S	K/N/A	20	21	22	21	22	21.20	0.353	1.15	0.41	148	148
26	Rubea	896	Mouth tuck	LS.1	20	21	22	21	22	21.20	0.353	1.15	0.41	148	148
27	Fatama	851	Dosting Tuck	LS.2	20	21	22	21	22	21.20	0.353	1.15	0.41	148	148
28	Sima	718	Button mark and stich	B.S	20	19	18	18	19	18.80	0.313	1.15	0.36	167	167
29	Mamun	75	Burtuck(B)	B/T	30	31	30	29	30	30.00	0.500	1.15	0.58	104	104
30	Morzina Ruma	645 721	Leg Hem	D/NL	39 34	40 35	41 36	39 35	41 37	40.00 35.40	0.667 0.590	1.15 1.15	0.77 0.68	78 88	167
31	Priya	381	Size lebel join		13	14	15	16	15	14.60	0.243	1.15	0.28	214	214

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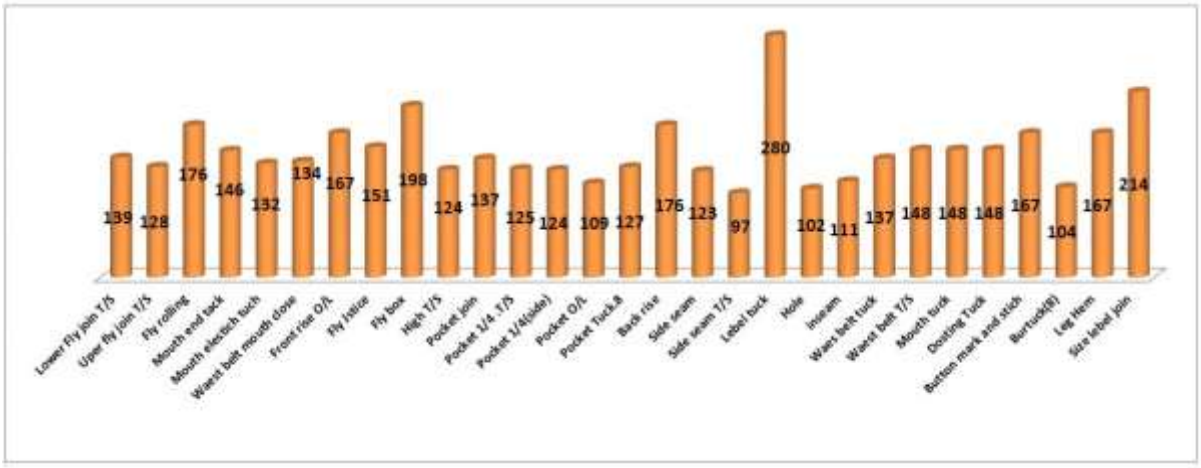
SL	Process Name	Capacity
1	Lower Fly join T/S	139
2	Upper fly join T/S	128
3	Fly rolling	176
4	Mouth end tack	146
5	Mouth elastic tuch	132
6	Waist belt mouth close	134
7	Front rise O/L	167
8	Fly J stice	151
9	Fly box	198
10	High T/S	124
11	Pocket join	137
12	Pocket 1/4 .T/S	125
13	Pocket 1/4(side)	124
14	Pocket O/L	109
15	Pocket Tuck.8	127
16	Back rise	176
17	Side seam	123
18	Side seam T/S	97
19	Label tuck	280
20	Hole	102
21	inseam	111
22	Waist belt tuck	137
23	Waist belt T/S	148
24	Mouth tuck	148
25	Dosting Tuck	148
26	Button mark and stich	167
27	Burtuck(8)	104
28	Leg Hem	167
29	Size lebel join	214

MG Niche Flair LTD							
Line Capacity Graph							
Line No.	1	Oberver Name	Md. Rabbi Hasan			Date	20.10.2021
Buyer	Hipercor	Style	(S198501200)	Item	Long Trouser	Grph No.	2nd



Line Capacity-2

Date	25.11.2021		Factory	MGNFL-Knit	Total Obs Time	6.61	100%	Input date	22-Nov-21
Buyer	Primark		Section	Sewing	Total CC Time (Effective)	0.00	0%	Graph #	3rd
Style	36291		Line	3	Total M/c Cont. Time	6.61	100%	Previous G/date	N/A
Observer	Nihar Roy		Item	W Boxer	Total Non M/c Cont. Time	0.00	0%	SMV	7.40

TACCT	6.61	Number of Workers	24	Worker Performance %	97%
BPT(Basic Pcs Time)	0.28	Worker Potential Pcs/hr	218	Productivity Gap	24%
HPT(Highest Pcs Time)	0.29	Worker Potential Pcs/ 10hrs	2177	Planed Peak Efficiency%	60%
LPT(Lowest Pcs Time)	0.26	Current Pcs/hr	165	Planed Current Efficiency%	51%

SL NO	OPERATOR NAME	ID NO	OPERATION NAME	M/C Type	CYCLE TIME					AVERAGE CYCLE TIME(Sec)	Avg.Cycle Time (Min)	Allowance-15%	S.M.V	CAPACITY PER Hr	CAPACITY In proces
					1	2	3	4	5						
1	SUBARNA	775	Fly join & T/S	SNLS	12	11	13	12	12	12.00	0.200	1.15	0.23	261	261
2	RUMA	683	Lower Fly rolling	SNLS	8	9	9	8	8	8.40	0.140	1.15	0.16	375	375
3	Dn Islam	225	Front rise tack	SNLS	10	10	10	11	10	10.20	0.170	1.15	0.20	307	307
4	SHAJAHAN	276	Front rise O/L	OL	11	12	13	12	12	12.00	0.200	1.15	0.23	261	261
5	Nazma	695	Fly end tack	SNLS	10	9	10	10	11	10.00	0.167	1.15	0.19	313	313
6	Sadia	826	Button hole-1	BH	11	12	11	11	11	11.20	0.187	1.15	0.21	280	280
7	HOSSAIN	665	Upper fly rolling	SNLS	11	10	10	10	10	10.20	0.170	1.15	0.20	307	307
9	ARIN	44	Front Side Slit	SNLS	14	13	14	15	14	14.00	0.233	1.15	0.27	224	224
10	SALIM	283	Front rise T/S	DNL	10	10	10	11	10	10.20	0.170	1.15	0.20	307	307
11	Babu	8	Back rise	FOA	12	13	11	13	13	12.40	0.207	1.15	0.24	252	252
12	Khaleda	761	Back side slit	SNLS	20	21	20	21	22	20.80	0.347	1.15	0.40	151	523
	Sathi	329			19	18	18	19	17	18.20	0.303	1.15	0.35	172	
13	FARJANA	108	Side seam	FOA	18	19	18	18	18	18.20	0.303	1.15	0.35	172	327
	Rafiqul	760			20	20	21	20	20	20.20	0.337	1.15	0.39	155	
14	MOYNA	105	Inseam	FOA	11	11	11	12	11	11.20	0.187	1.15	0.21	280	280

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15	SADIA	721	Leg Hem	SNLS	28	27	28	28	29	28.00	0.467	1.15	0.54	112	296
	Halima	725			36	35	37	35	36	35.80	0.597	1.15	0.69	87	
	Morjina	685			33	32	32	33	33	32.60	0.557	1.15	0.62	97	
16	NURAJA	718	Lable attach	SNLS	10	11	10	11	10	10.40	0.173	1.15	0.20	301	301
17	BILKIS	30	Elastic make	SNLS	7	6	7	7	7	6.80	0.113	1.15	0.13	460	261
18	RAHIMA	49	Elastic tuck with body	SNLS	24	26	24	24	25	24.60	0.410	1.15	0.47	127	259
	SOHELA	161			24	24	24	23	24	23.80	0.397	1.15	0.46	132	
19	RUBEL	158	Waist belt T/S	KAN	14	15	14	14	14	14.20	0.237	1.15	0.27	220	220
20	HOSSAIN	570	Button Attach-L with insert	BS	12	11	12	12	11	11.60	0.193	1.15	0.22	270	270
21	MAMUN	75	Bar tack-3	BT	11	10	10	10	10	10.20	0.170	1.15	0.20	307	307
21															0
22															0
23															0
24															
25															
26															
27															
28															
29															
30															
									MAN		6.613				
									M/C		6.613				

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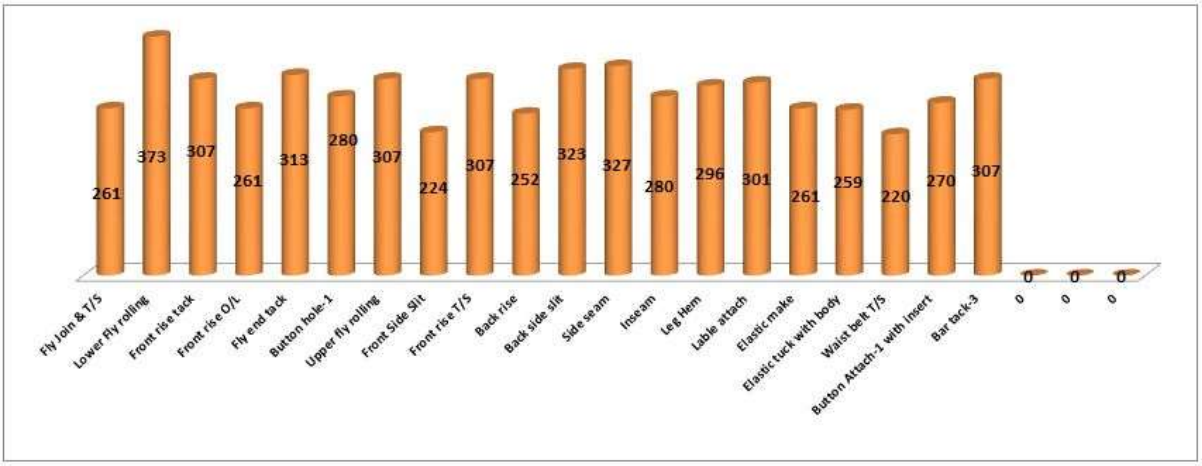
SL	Proces Name	Capacity
1	Fly Join & T/S	261
2	Lower Fly rolling	373
3	Front rise tack	307
4	Front rise O/L	261
5	Fly end tack	313
6	Button hole-1	280
7	Upper fly rolling	307
8	Front Side Slit	224
9	Front rise T/S	307
10	Back rise	252
11	Back side slit	323
12	Side seam	327
13	Inseam	280
14	Leg Hem	296
15	Lable attach	301
16	Elastic make	261
17	Elastic tuck with body	259
18	Waist belt T/S	220
19	Button Attach-1 with insert	270
20	Bar tack-3	307
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0

Line Capacity Graph							
Line No.	**3**	Observer Name	**Nihar Roy**		Date		**25.11.2021**
Buyer	**Primark**	Style	**36291**	Item	**W.Boxer**	Grph No.	**3rd**



Line Capacity-3

Date	9.11.2021	Factory	MGNFL-Knit	Total Obs Time	7.24	100%	Input date	02.11.2021
Buyer	Spring field	Section	Sewing	Total CC Time (Effective)	0.00	0%	Graph #	First
Style	7BX103,98,99,101	Line	2	Total M/c Cont. Time	7.24	100%	Previous G/date	N/A
Observer	Md. Rabbi Hasan	Buss	W.Bower	Total Non M/c Cont. Time	0.00	0%	SMV	8.15

TACCT	7.24	Number of Workers	24	Worker Performance %	98%
BPT(Basic Pro Time)	0.30	Worker Potential Pro/hr	199	Productivity Gap	17%
HPT(Highest Pro Time)	0.32	Worker Potential Pro/ 10hrs	1990	Planed Peak Efficiency%	69%
LPT(Lowest Pro Time)	0.29	Current Pro/hr	169	Planed Current Efficiency%	51%

SL NO	OPERATOR NAME	ID NO	OPERATION NAME	M/C Type	CYCLE TIME					AVG CYCLE TIME(Sec)	Avg Cycle Time (Min)	Allowance-15%	S.M.V	CAPACITY PER Hr	CAPACITY In pieces
					1	2	3	4	5						
1	Lalon	160	Fly rolling	SNLS	10	10	11	11	11	10.80	0.177	1.15	0.20	295	295
2	Mala	906	F.Safty Tuck	SNLS	13	12	12	11	11	11.80	0.197	1.15	0.23	265	265
3	Nasim	558	Fly end tack	SNLS	10	11	10	10	9	10.00	0.167	1.15	0.19	313	313
4	Sumi	264	Upper fly rolling	SNLS	12	12	13	11	12	12.00	0.200	1.15	0.23	261	261
5	Surya	779	Box make	SNLS	13	12	12	13	11	12.20	0.203	1.15	0.23	257	257
6	ROKIA	758	Button hole-1	BH	11	12	11	10	12	11.20	0.187	1.15	0.21	280	280
7	Nazma	559	Upper fly end tuck	SNLS	11	10	9	10	10	10.00	0.167	1.15	0.19	313	313
8	Popy	643	Front Side SM	SNLS	24	22	24	23	22	23.00	0.383	1.15	0.44	136	291
	Afsana	761			20	20	19	20	22	20.20	0.337	1.15	0.39	155	
10	Billal	668	Front rise T/S	DNLS	11	13	12	13	12	12.20	0.203	1.15	0.23	257	257
11	Babu	13	Back rise	FOA	11	12	11	10	11	11.00	0.183	1.15	0.21	285	285
12	Asrin	44	Back side slit	SNLS	12	11	12	13	12	12.00	0.200	1.15	0.23	261	261
13	FARJANA	108	Side seam	FOA	21	20	22	21	21	21.00	0.350	1.15	0.40	149	286
	Momer	1012			23	22	24	22	23	22.80	0.380	1.15	0.44	137	
	Rakul	109			12	13	11	11	12	11.80	0.197	1.15	0.22	270	

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14			Inseam	FOA											270
15	SADIA	721	Leg Hem	SNLS	30	30	29	30	30	29.80	0.497	1.15	0.57	105	308
	MORJINA	645			32	30	30	31	30	30.60	0.510	1.15	0.58	102	
	Halima				32	31	31	30	32	31.20	0.520	1.15	0.60	100	
17	Bulbuli	30	Elastic make	SNLS	7	6	8	9	7	7.40	0.123	1.15	0.14	423	423
18	RAHIMA	139	Elastic tuck with body	SNLS	26	25	25	24	25	24.20	0.403	1.15	0.46	129	254
	Bilkis	30			26	24	24	27	25	25.20	0.420	1.15	0.48	124	
19	RUBEL	158	Waist belt T/S	KAN	15	16	15	16	16	15.60	0.260	1.15	0.30	201	201
20	Nuraja		Lebel make		14	14	15	15	14	14.40	0.240	1.15	0.28	217	217
21	Imrik	767	Lebel att with body		12	11	14	12	11	12.00	0.200	1.15	0.23	261	261
22	Mahamuda	728	Care lebel att		13	12	12	11	12	12.00	0.200	1.15	0.23	261	261
30	Sima		Button Attach-1 with insert	BI	10	11	11	10	9	10.20	0.170	1.15	0.20	307	307
31	Sufjan		Bar tack-2	BT	10	10	9	11	10	10.00	0.167	1.15	0.19	313	313
32															0
33															0
34															0
35															
36															
37															
38															

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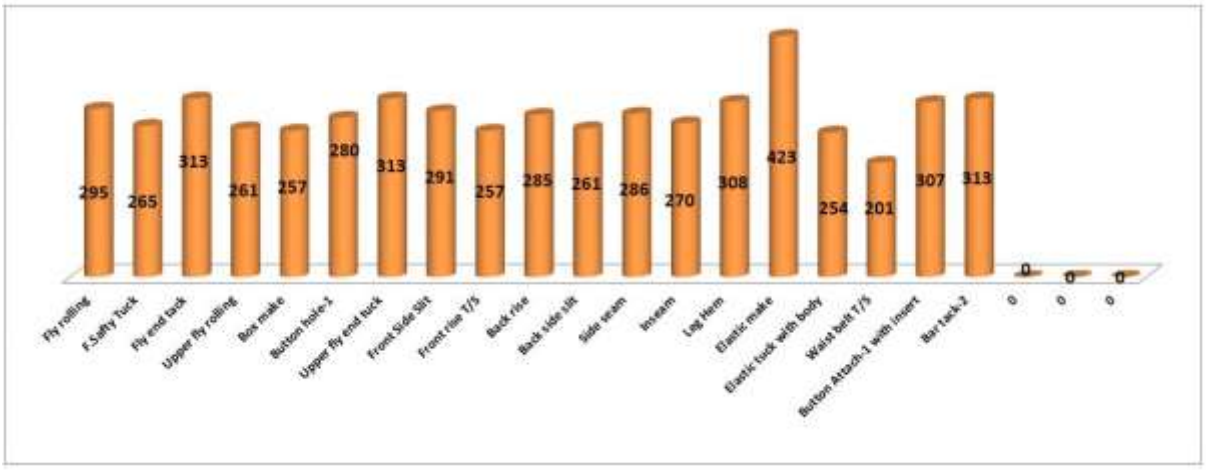
SL	Process Name	Capacity
1	Fly rolling	295
2	F.Safty Tuck	265
3	Fly end tack	313
4	Upper fly rolling	261
5	Box make	257
6	Button hole-1	280
7	Upper fly end tuck	313
8	Front Side Slit	291
9	Front rise T/S	257
10	Back rise	285
11	Back side slit	261
12	Side seam	286
13	Inseam	270
14	Leg Hem	308
15	Elastic make	423
16	Elastic tuck with body	254
17	Waist belt T/S	201
18	Button Attach-1 with insert	307
19	Bar tack-2	313
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0

Line Capacity Graph								
Line No.	**2**	Oberver Name	**Md. Rabbi Hasan**				Date	**5.11.2021**
Buyer	**Spring field**	Style	**7BX103,98,99,101**	Item	**W.Boxer**	Grph No.	**First**	



6.4: Operator Skill Inventory

Skill Matric-1

MG Niche Flair Ltd-2-(Knit)											
OPERATOR SKILL INVENTORY											
SL	Name	ID	DOJ	Line	Operation Name	M/C	Capacity	Efficiency	Propose Grade	Existing Grade	REMARKS
1	Liza Akter	13	1-Jan-18	3	Elastic Tuck With Body	SNLS	90	68%	5	5	W Boxer
					Back tap T/S	SNLS	120	60%			T-Shirt
					Side Band Tap T/S	SNLS	90	60%			T-Shirt
					Make Elastic For Waist Belt	SNLS	380	65%			Brief
						Average Efficiency		63%			
2	Abul Kalam kazi	77	3-Jan-18	3	Waist belt T/S	KAN	160	75%	3	3	W Boxer
					Side Seam	OL	75	81%			T-Shirt
					Side Seam	OL	70	70%			W Short pant
					Arm hole T/S	FL	120	80%			T-Shirt
					Bar tack-5	BT	140	82%			W Boxer
					Waist Elastic join	OL	200	80%			Brief
						Average Efficiency		78%			
3	Babul Khan	98	8-Jan-18	3	Inseam	FOA	220	73%	4	4	W Boxer
					Waist belt T/S	FL	200	67%			Brief
					Side Band Tap Att	SNLS	55	68%			T-Shirt
					Plaket att with body	SNLS	120	60%			T-Shirt
						Average Efficiency		67%			
4	Rojina Khatun	106	8-Jun-10	3	Leg hem	SNLS	90	75%	3	3	W Boxer
					Leg hem	DNLS	80	73%			W Boxer
					Side Seam	OL	75	81%			T-Shirt
					Pannel join with bady	OL	190	79%			K Boxer
					Waist Elastic join	OL	200	80%			Brief
						Average Efficiency		78%			
5	Akhi Begum	107	14-Feb-13	3	Back rise	FOA	240	80%	3	3	W Boxer
					Leg hem	SNLS	85	78%			W Boxer
					Leg hem	DNLS	70	64%			W Boxer
					Side seam	OL	75	81%			T-Shirt
					Leg piping	FL	180	78%			K Boxer
						Average Efficiency		76%			
6	Shefa Khanam	189	5-Nov-12	3	Side seam	FOA	115	67%	3	4	W Boxer
					Bar tack-8	BT	90	83%			W Short pant
					Button Att-3	BS	190	78%			W Boxer
					Pannel join with bady	OL	160	64%			K Boxer
					Button Hole-3	BH	140	70%			T-Shirt
					Side seam	OL	210	77%			Brief
					Neck T/S	FL	180	60%			T-Shirt
						Average Efficiency		71%			
7	Rojina Khanom	190	21-Jan-17	3	Gusset Join With Back Part	OL	230	69%	5	5	Brief
					Shoulder join	OL	160	64%			T-Shirt
					Placket T/S	SNLS	95	63%			T-Shirt
					High O/L	OL	220	55%			W Boxer
						Average Efficiency		63%			
8	Fatema Akter	194	9-Oct-17	3	Side seam	OL	220	81%	3	3	Brief
					Waist belt T/S	FL	230	77%			Brief
					Back rise	FOA	220	73%			W Boxer
					Front rise T/S	DNLS	230	77%			W Boxer
					Pocket join	SNLS	60	75%			T-Shirt
						Average Efficiency		76%			
9	Sufia	204	3-Feb-18	3	Front rise Safety tack	SNLS	200	67%	4	4	W Boxer
					Pocket 1/4 T/S	SNLS	130	65%			W Short pant
					Side Seam	OL	180	66%			Brief
					Waist belt T/S	FL	180	72%			K Boxer
						Average Efficiency		67%			
10	Sokina	207	3-Feb-18	3	Pocket join-2	SNLS	85	71%	4	4	W Short pant
					Front rise Safety tack	SNLS	190	63%			W Boxer
					Front pannel O/L	OL	140	70%			K Boxer
					Back Side Slit	SNLS	120	70%			W Boxer
						Average Efficiency		69%			
11	Din Islam	223	3-Feb-18	3	Upper fly rolling	SNLS	210	63%	4	4	W Boxer
					Box make	SNLS	120	70%			W Boxer
					Upper fly att with T/S	SNLS	140	75%			W Short pant
					Label att	SNLS	330	71%			Brief
						Average Efficiency		70%			
12	Shohag	251	8-Feb-18	3	Elastic Tuck With Body	SNLS	100	75%	4	4	W Boxer
					Front rise T/S	DNLS	200	67%			W Boxer
					Gusset Join	OL	150	70%			K Boxer
					J-Stitch	SNLS	160	53%			W Short pant
						Average Efficiency		66%			
13	Dinaj	266	11-Feb-18	3	Side Seam	FOA	125	73%	3	4	W Boxer
					Back rise	FOA	240	80%			W Boxer
					Leg hem	DNLS	70	76%			W Short pant
					Leg hem	SNLS	80	73%			W Boxer
					Side seam	OL	70	70%			W Short pant
					Sleeve hem	FL	140	82%			T-Shirt
					Waist belt T/S	FL	160	67%			K Boxer
						Average Efficiency		74%			
14	Nazmul Shek	331	3-Mar-18	3	Side Seam	OL	62	67%	4	4	T-Shirt
					High O/L	OL	240	60%			W Boxer
					Bar tack-8	BT	80	71%			W Short pant
					Button Att-3	BS	190	78%			W Boxer
						Average Efficiency		69%			
15	Rumi Khatun	350	4-Mar-18	3	Placket Box Make	SNLS	80	67%	4	4	T-Shirt
					Placket T/S	SNLS	100	67%			T-Shirt
					Waist Elastic join	OL	160	64%			Brief
					Leg Elastic join	OL	190	63%			Brief
					Side Band Tap T/S	SNLS	95	63%			T-Shirt
						Average Efficiency		65%			

16	Priya Begum	381	14-Mar-18	3	Pocket 1/4 T/S	SNLS	110	55%	5	5	W.Short pant
					Box make	SNLS	100	58%			W.Boxer
					Fly rolling	SNLS	150	60%			W.Boxer
					Make Elastic For Waist Belt	SNLS	320	53%			Brief
						Average Efficiency		57%			
17	Morjina Khatun	520	5-May-18	3	Label att	SNLS	180	60%	6	6	K.Boxer
					Elastic Tuck With Body	SNLS	80	60%			W.Boxer
					Lable make	SNLS	200	67%			W.Boxer
					Pocket Tuck-6	SNLS	50	54%			W.Short pant
						Average Efficiency		60%			
18	Suma Begum	522	5-May-18	3	Front Side slit	SNLS	210	65%	4	4	W.Boxer
					Back tap T/S	SNLS	145	73%			T-Shirt
					Pocket att	SNLS	55	69%			T-Shirt
					Pocket att-2	SNLS	80	67%			W.Short pant
						Average Efficiency		68%			
19	Fatema Begum	540	7-May-18	3	Pannel join with body	OL	160	64%	4	4	K.Boxer
					Back poping join	FL	150	75%			T-Shirt
					Leg hem	SNLS	75	69%			W.Boxer
					Leg hem	DNLS	65	70%			W.Short pant
						Average Efficiency		70%			
20	Kamrunnaher popi	643	3-Jul-18	3	Lower Fly Att. With T/S	SNLS	120	64%	5	5	W.Short pant
					Fly end tack	SNLS	190	63%			W.Boxer
					Back part side slit	SNLS	100	58%			W.Boxer
						Average Efficiency		62%			
21	Sumsunnaher	707	5-Sep-18	3	Side Band Tap Make	SNLS	120	60%	5	5	T-Shirt
					Label att	SNLS	200	67%			W.Boxer
					Security Tuck	SNLS	110	64%			W.Short pant
					Back Side Slit	SNLS	90	53%			W.Boxer
						Average Efficiency		61%			
22	Sherma Akter	718	1-Oct-13	3	Bar tack-5	BT	220	73%	4	4	W.Boxer
					Button Att-3	BS	200	80%			W.Boxer
					Button Hole-3	BH	160	80%			T-Shirt
						Average Efficiency		76%			
23	Mahmuda	728	1-Mar-17	3	Leg Elastic join	OL	130	65%	4	4	Brief
					Shoulder join	OL	180	72%			T-Shirt
					Gusset Join With Back Part	OL	230	69%			Brief
					Upper fly att with T/S	SNLS	130	65%			W.Short pant
					Pannel OL	OL	140	70%			K.Boxer
						Average Efficiency		70%			
24	Lavly Khatun	763	14-Nov-18	3	Plaket att with body	SNLS	80	56%	6	6	T-Shirt
					Elastic make	SNLS	200	67%			W.Boxer
					Label att	SNLS	180	60%			W.Boxer
						Average Efficiency		61%			
25	Nazma Begum	764	15-Nov-18	3	Label att	SNLS	180	60%	6	6	W.Boxer
					Side band tack	SNLS	120	60%			T-Shirt
					Pocket Tuck-6	SNLS	52	56%			W.Short pant
						Average Efficiency		59%			
26	Lovely Khatun	767	1-Dec-18	3	Main Label att+ Drowstings close	SNLS	110	73%	4	4	W.Short pant
					Side Seam	OL	65	70%			T-Shirt
					High T/S	DNLS	200	67%			W.Boxer
						Average Efficiency		70%			
27						Average Efficiency		#DIV/0!			
28						Average Efficiency		#DIV/0!			
29						Average Efficiency		#DIV/0!			
30						Average Efficiency		#DIV/0!			
31						Average Efficiency		#DIV/0!			
32						Average Efficiency		#DIV/0!			

Skill Matric-2

MG Niche Flair Ltd-2-(Knit)

OPERATOR SKILL INVENTORY

SL	Name	ID	DOJ	Line	Operation Name	M/C	Capacity	Efficiency	Existing Grade	REMARKS
1	Babu	8	11-Nov-21	1	Side seam	OL	175	64%	5	Brief
					Lower fly rolling	SNLS	130	52%		W.Boxer
					Side seam	FOA	115	67%		W.Boxer
							Average Efficiency	61%		
2	Bilkis	30	11-Nov-21	1	Waist Elastic Tack	SNLS	90	68%	5	W.Boxer
					Label Att	SNLS	180	60%		W.Boxer
					Pocket tack-8	SNLS	55	64%		W.Short pant
							Average Efficiency	64%		
3	Airin Begum	44	11-Nov-21	1	Back tap T/S	SNLS	150	75%	4	T-Shirt
					Placket join	SNLS	90	68%		Brief
					Front rise T/S	SNLS	200	67%		W.Boxer
							Average Efficiency	70%		
4	Mamunur Rashid	75	11-Nov-21	1	Sleeve Hem	FL	100	67%	4	T-Shirt
					Side seam	OL	170	62%		Brief
					Bar tack-8	BT	85	78%		W.Short pant
					Button Att-3	BS	180	72%		W.Boxer
							Average Efficiency	70%		
5	Moyna Akter	105	11-Nov-21	1	Inseam	FOA	240	80%	3	W.Boxer
					Side seam	OL	70	76%		T-Shirt
					Waist Elastic join	OL	200	80%		Brief
					Gusset T/S	FL	300	75%		K.Boxer
					Box make	SNLS	140	82%		W.Boxer
							Average Efficiency	79%		
6	Rohima Begum	119	11-Nov-21	1	Upper fly att with T/S	SNLS	130	69%	6	W.Short pant
					Label Att	SNLS	180	60%		W.Boxer
					Waist belt tack	SNLS	90	68%		W.Boxer
							Average Efficiency	66%		
7	Mohiuddin	120	12-Nov-21	1	Leg hem	SNLS	75	63%	4	W.Boxer
					Side seam	OL	65	70%		T-Shirt
					Bar tack-8	BT	85	78%		W.Short pant
					Inseam	FOA	150	50%		W.Boxer
							Average Efficiency	65%		
8	Sahriar Ahmed	158	12-Nov-21	1	Waist belt T/S	KAN	180	84%	4	W.Boxer
					Side seam	OL	170	62%		T-Shirt
					Neck T/S	FL	200	67%		T-Shirt
					Waist belt T/S	FL	170	68%		K.Boxer
							Average Efficiency	70%		
9	Shohela	161	12-Nov-21	1	Back Tap T/S	SNLS	110	55%	5	T-Shirt
					Faching join & T/S	SNLS	150	60%		W.Boxer
					Waist belt tack	SNLS	95	71%		W.Boxer
							Average Efficiency	62%		
10	Selim	283	12-Nov-21	1	Side seam	OL	50	54%	4	T-Shirt
					Bar tack-5	BT	120	70%		W.Boxer
					Front rise T/S	DNSL	150	60%		W.Boxer
					Box make	SNLS	130	76%		W.Boxer
							Average Efficiency	65%		
11	Jaheda Khatun	515	12-Nov-21	1	piping att at Leg	FL	165	69%	4	K.Boxer
					Waist b elt T/S	FL	210	70%		Brief
					Front pannel O/L	OL	140	65%		K.Boxer
					Sleeve hem	FL	150	75%		T-Shirt
							Average Efficiency	70%		
12	Morjina Akter	645	12-Nov-21	1	Leg hem	DNLS	65	70%	4	W.Short pant
					Faching join & T/S	SNLS	200	80%		W.Boxer
					Leg hem	SNLS	75	63%		W.Boxer
							Average Efficiency	71%		
13	Bulbuli Khatun	659	12-Nov-21	1	Inseam T/S	FL	310	78%	4	K.Boxer
					Waist belt T/S	KAN	155	72%		W.Boxer
					Side seam	OL	65	70%		T-Shirt
							Average Efficiency	73%		
14	Hossain Ahmed	665	13-Nov-21	1	Neck T/S	FL	200	60%	4	T-Shirt
					J-Stitch	SNLS	150	63%		W.Short pant
					Box make	SNLS	140	82%		W.Boxer
					Side band tap att	SNLS	50	63%		T-Shirt
					Front rise T/S	DNLS	160	84%		W.Boxer
							Average Efficiency	67%		
15	Ruma Akter	683	13-Nov-21	1	Side Seam	OL	150	70%	4	K.Boxer
					Neck Join	OL	140	70%		T-Shirt
					Neck T/S	FL	170	57%		T-Shirt
					Label Att	SNLS	180	60%		W.Boxer
							Average Efficiency	64%		

16	Najma Khatun	693	13-Nov-21	1	Lower Fly Rolling with Elastic	SNLS	150	60%	5	W.Short pant
					Fly end tack	SNLS	200	67%		W.Boxer
					Placket T/S	SNLS	100	67%		T-Shirt
							Average Efficiency	64%		
17	Nureza Begum	719	13-Nov-21	1	Faching join & T/S	SNLS	150	60%	5	W.Boxer
					High O/L	OL	230	58%		W.Boxer
					Label Att	SNLS	200	67%		W.Boxer
							Average Efficiency	61%		
18	Ruma Akter	721	13-Nov-21	1	Pocket 1/4 T/S	SNLS	140	70%	4	W.Short pant
					Leg hem	DNLS	60	65%		W.Boxer
					Leg hem	SNLS	80	67%		W.Boxer
					Side Seam	OL	80	65%		T-Shirt
							Average Efficiency	67%		
19	Halima Akter	725	13-Nov-21	1	Leg hem	SNLS	60	60%	4	W.Boxer
					Upper Fly rolling	SNLS	180	80%		W.Boxer
					Front rise T/S	DNSL	214	64%		W.Boxer
					J-Stitch	DNSL	170	71%		W.Short pant
							Average Efficiency	64%		
20	Sathiara Khatun	729	13-Nov-21	1	Pocket Opening T/S	SNLS	95	63%	4	W.Short pant
					Back part side slit	SNLS	120	70%		W.Boxer
					Box make	SNLS	200	67%		W.Boxer
					Inseam	OL	90	68%		W.Short pant
							Average Efficiency	67%		
21	Mitu Akter	740	13-Nov-21	1	Side seam O/L	OL	65	70%	4	T-Shirt
					Inseam	OL	210	70%		K.Boxer
					Lower fly rolling	SNLS	150	60%		W.Boxer
							Average Efficiency	67%		
22	Robiul Islam	758	13-Nov-21	1	Sleeve join	OL	120	80%	3	T-Shirt
					Side Seam	OL	70	76%		T-Shirt
					Waist belt join	OL	210	84%		Brief
					Waist belt T/S	KAN	160	75%		W.Boxer
					Button hole	BH	280	70%		W.Boxer
							Average Efficiency	77%		
23	Tanzina Akter	759	14-Nov-21	1	Box make	SNLS	180	60%	4	W.Boxer
					Front side slit	SNLS	190	63%		W.Boxer
					Sleeve join	OL	100	87%		T-Shirt
							Average Efficiency	63%		
24	Rabiqul Islam	760	14-Nov-21	1	Side Seam	OL	70	76%	4	T-Shirt
					Waist belt T/S	KAN	140	65%		W.Boxer
					Side Seam	FOA	130	65%		W.Boxer
							Average Efficiency	69%		
25	Khaleda Akter	761	14-Nov-21	1	Main Label att+ Drawstings close	SNLS	110	73%	4	W.Short pant
					Upper fly att with T/S	SNLS	140	75%		W.Short pant
					Back part side slit	SNLS	110	84%		W.Boxer
					Back rise	OL	180	80%		W.Boxer
					Shoulder T/S	FL	200	67%		T-Shirt
							Average Efficiency	68%		
26	Monni Akter	773	14-Nov-21	1	Body hem	FL	100	47%	4	T-Shirt
					Sleeve hem	FL	90	80%		T-Shirt
					Neck T/S	FL	160	53%		T-Shirt
							Average Efficiency	53%		
27	Khaleda Begum	775	14-Nov-21	1	Lower Fly Att. With T/S	SNLS	130	76%	4	W.Short pant
					Fly rolling	SNLS	180	72%		W.Boxer
					Leg hem	SNLS	60	65%		W.Boxer
					High O/L	OL	240	60%		W.Boxer
							Average Efficiency	68%		
28	Suriaya Akter	779	14-Nov-21	1	Moon T/S	SNLS	140	70%	4	T-Shirt
					Back Tap T/S	SNLS	140	70%		T-Shirt
					Pocket Opening T/S	SNLS	90	60%		W.Short pant
					Elastic tack	SNLS	220	73%		W.Boxer
							Average Efficiency	68%		
29	Sukiara	781	14-Nov-21	1	Security Tuck	SNLS	105	81%	5	W.Short pant
					Shoulder join	OL	140	56%		T-Shirt
							Average Efficiency	59%		
30							Average Efficiency	#DIV/0!		
31							Average Efficiency	#DIV/0!		
32							Average Efficiency	#DIV/0!		

6.5: Time Study in Industrial Engineering (IE)

Time study

Time study may be defined as "the art of observing and recording the time required to do each detailed element of an industrial operation".

Use of Time Study

(i) It is useful in determining the standard time for various operations, which helps in fixing wages and incentives.

(ii) It is useful to estimate the cost of a product accurately.

(iii) It helps in production control.

Procedure for Time Study

He performs time study in the following stages:

(a) Analysis of Work:

The complete job and its operations are split up into various elements. These elements are finalized after conducting motion study. In the end, time required for the job preparation, cleaning of machine and oiling etc. should be included. Thus, time study includes all the tasks performed by the worker and not only the effective work.

(b) Standardization of Methods:

Before conducting time-study, all the constituents of the job such as materials, equipment, tools, working conditions and methods are standardized. The method should be easy, safe and quickest in the given conditions, so that it can be accepted by workers.

(c) Making Time Study:

The study is done on a printed time study record sheet as shown below which is fixed on a board known as Time Study Board. On one corner generally right-hand top corner a stopwatch is placed. This stopwatch should have a decimal scale dial so that it can read up to 0.001 minute.

Different time readings of one element are recorded in the corresponding column of the record sheet. Several sets of readings are taken to arrive at an accurate result. After noting all these readings, average time is calculated, neglecting abnormal values, if any. This average time is multiplied by a leveling factor also called 'Rating Factor', which is generally assumed as 90-120% to get the time required by a normal worker. The multiple of average time and rating factor is known as "Normal Time".

Some allowances such as personal allowance (20%), fatigue allowance (5%), preparation allowance (5%) is added in normal time to obtain the standard time. The standard time is the basis for the calculation of wages and incentives.

TIME STUDY RECORD SHEET

Elements	*Time*						*Average observed Time (Neglecting abnormal values)*
	1	*2*	*3*	*4*	*5*	*6*	
A	3.6	3.4	2.2	3.5	3.8	3.9	3.5, nelecting III reading.
B	6.8	7.2	7.0	9.5	6.9	7.1	7.0, neglecting IV readings.
C	4.5	4.9.	4.8	4.9	4.7	4.4	4.7.
	Observed time—						Personal Allowance
	Level or Rating factor—						Fatigue Allowance
	Normal Time—						Standard Time—

Thus, Standard time = Average Time × Rating factor + Other allowances.

Performance Rating:

Performance rating is that process, during which the time study engineer compares the performance of the operator under observation with his own concept of normal performance.

In mathematical term

$$\text{Performance Rating} = \frac{\text{Observed Performance}}{\text{Normal Performance}} \text{x } 100$$

The concept of normal performance must be such that the time standards are set from it, are within the capacity of most workers in the enterprise.

It would be of no use in setting standards so high that only the best worker could attain them since programs or estimates based on them would never be fulfilled.

6.6: Necessary IE Terms of Apparel Industry

Very basic apparel industrial engineering terms discussed with example for clear understanding. List of terms are:

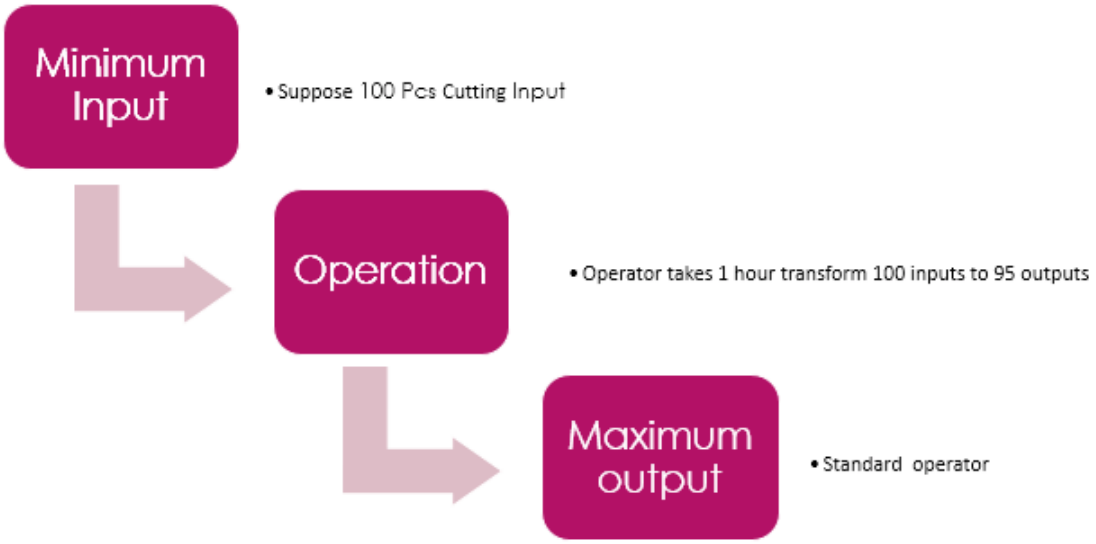
Standard Minute Value (SMV)

- **SMV** defined as the term Standard Minute Value, is mostly used in the garments industry and it is a common measurement calculated by the Industrial Engineer. Generally, SMV indicates the time taken to make garments by the workers using the right types of machinery.
- **SMV = BASIC TIME + (BASIC TIME × ALLOWANCE)**
- Suppose to complete an operation, a standard operator takes 1 minute.
- We put 15% allowance (Men, M/c & Time)
- SMV=1+(1×.15) Min
  =(1+.15) Min
  =1.15 Min
- GMT SMV is the sum of SMV for all M/c & Manual operation to complete an item

Related Terms of SMV

- **Standard Operator:** For a specific item & style, the potential operator who can give maximum output with the best quality & can improve productivity.
- Let's see an Example for better understanding,
- Batsman faces 10 balls to score 5 Runs
- Batsman faces 10 balls to score 12 runs
- Batsman faces 10 balls to score 10 runs.
- Obviously 2nd one is the potential batsman who uses his
- Inputs (balls) to get maximum output (Runs)

Related Terms of SMV: Standard Operator



- **Pre-defined Conditions:** On-time input arrival, single-piece flow, running m/c conditions, defined quality status, etc. are called pre-defined conditions.
- **Basic Time:** Actual time to complete an operation. In another word, basic time is the pick & drop time including an operation for quality output.
- Basic Time= Pick time + Operation + Drop time;
- Result , Input=Output with required quality
- In a broad sense , a GMT SMV=Sum of all operation SMV, not SMV of GMT + allowance.

Efficiency

- **Efficiency** defined as ‘’The comparison of what is actually produced or performed with what can be achieved with the same consumption of resources (Men, M/c, Material, etc.)’’
- Efficiency = Earned Minute/Available Minute
- Earned Minute = Production (Pcs) x SMV
- Available Minute = Manpower (Helper + Operator) x Working Time (Minute)

Calculation of Efficiency Percent

- Suppose any GMT item SMV is 5.5 (For any fixed style SMV always fixed)
- We use 22 Manpower(Operator & Helper) to achieve 1500 Pcs for 10 hours working shift
- Earned Minute = 1500× 5.5 or 8250 Min

- Available Minute = 22× (10×60) or 13200 Min
- Efficiency = 8250 Min/13200 Minute or 0.625
- Efficiency is expressed as % ,Then Efficiency =(0.625 ×100)% or 62.50%
- Efficiency is a ratio, not a number.
- Efficiency varies with Lead Time and Quantity. More Lead time & Quantity Increase Efficiency, on the other hand, less lead time tends us to use more MP or time to get the required output, so efficiency reduces.

Line Target

- Target= (total MP X WH X 60)/SMV
- Suppose We have 22 MP for 10 hr .GMT SMV is 5.5
- Target =(22 X10 X60)/5.5 =2400 PCs/Hr (That is 100% TGT)
- For expected efficiency this 100% Target is multiplied by efficiency to fix Line Target
- Line Target =(2400X.625) ; (Lets , we have expected efficiency of 62.5%)
  =1500 PCs or 150PCs/Hr

CPM and CM

CPM Stands for Cost Per Minute which means Cost of every minute of garments sewing operations. To offer the best competitive price to the buyer and make maximum profit on garments selling CPM cost need to be kept at a minimum level.

For Calculating of CPM you need to sum all direct labor cost and any other operational cost for a particular order or for a particular period.

CM/COM/MC

- Cost of Making (CM/COM)/Manufacturing cost(MC) have to calculate after calculating factory CPM.
- CM = (SMV × CPM)/ Expected Efficiency%
- Suppose , any GMT item SMV is 4.7, Expected efficiency = 65.8 % , CPM[let] = $0.0267
- CM = (4.7 × .0267)/ .658
  = $0.19/PCs
  = ($0.19 ×12)/Dzn
  =$2.28 /Dzn

Broad Calculation of Garments CM

To calculate the Cost of Making of a garment you have to collect the following information:

- First of all, you need to get the monthly information of factory rental expense, commercial expense, utility expenses (Electricity, Steam, Compressed Air, Water), transportation cost, repair & maintenance expenses, salary, and wages expense, etc. suppose for all these expenses the total cost is 70000 USD.
- Secondly, the number of functioning machine for a particular month. Suppose the number of machines is 120. Cost associate in the first section is for this 120 machine.
- You also need the number of machinery to do the layout for the particular item for which we are calculating the cost of making. Suppose the number of machines is 30.
- By using the existing layout, the amount of target production per hour (excluding the alteration and rejection of garments). Suppose 250 pcs per hour production will be there.
- The total number of working days for a particular month. This can be 26 days (30 days a month, 4 days of holiday in a month)

Cost of Making (CM) Rule

= {(Monthly total expenditure of the garments factory/ 26 days) / (Number of Functioning Machine of your factory for a particular month) X (Number of machine to complete the layout)} / [{(Production capacity per hour by using existing layout, excluding alteration and rejected quantity) X 8 working hours a day}] X 12 piece

= [{($70,000 / 26) / (120) X (30)} / {(250) X 8}] X 12

= [{2692.30 / (120) X (30)} / 2000] X 12

= (673.08 /2000) X 12

= .33654 X 12

= $4.04/dozen

Conventional VS Modern Profit Theory

- Conventional : COST + PROFIT = PRICE
- Modern : PRICE – COST = PROFIT
- Price should be moderate to get maximum order!
- Cost should be minimized to get maximum profit!

Work Study

- A systematic study of methods of work to improve effectiveness & set standards
- **2 s**tages:

1. **Method study**: study of current method & find out to implement the improved method
2. **Work measurement:** determine the standard time required to complete improved method

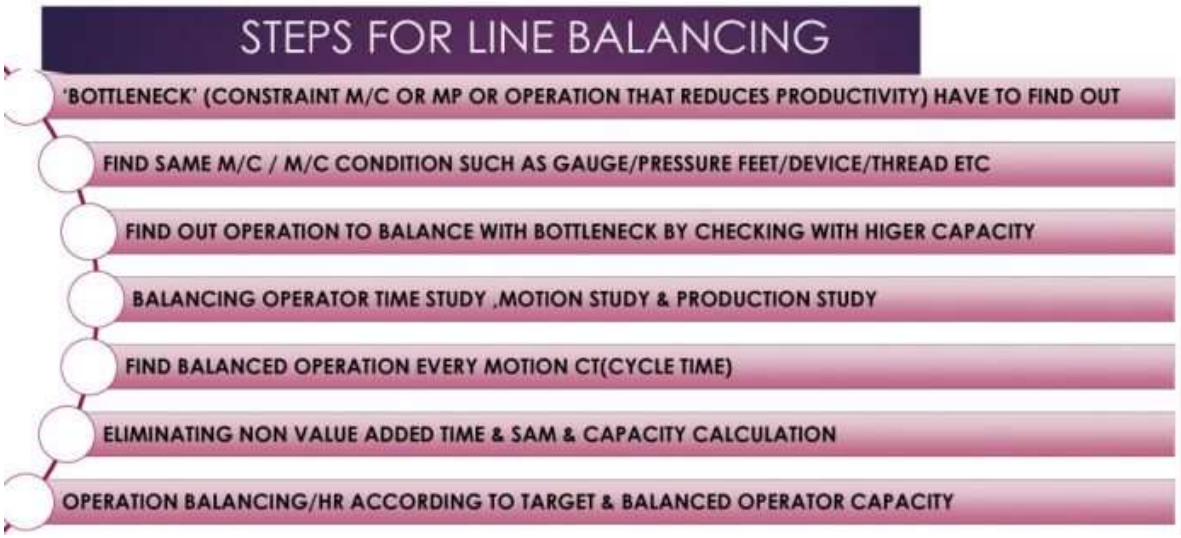
Benefits of Work Study

- Productivity improvement
- Efficiency increase
- Improved workflow
- Improved work layout
- Improved standards

Line Balancing

- Line balancing is a manufacturing engineering function in which the whole collection of production-line tasks are divided into equal portions.
- Well balanced lines avoid labor idleness & improve productivity
- Line balancing is for keeping workload (theoretical mp/actual mp) as 1 or less than 1 by balancing work as per capacity & target

Steps for Line Balancing



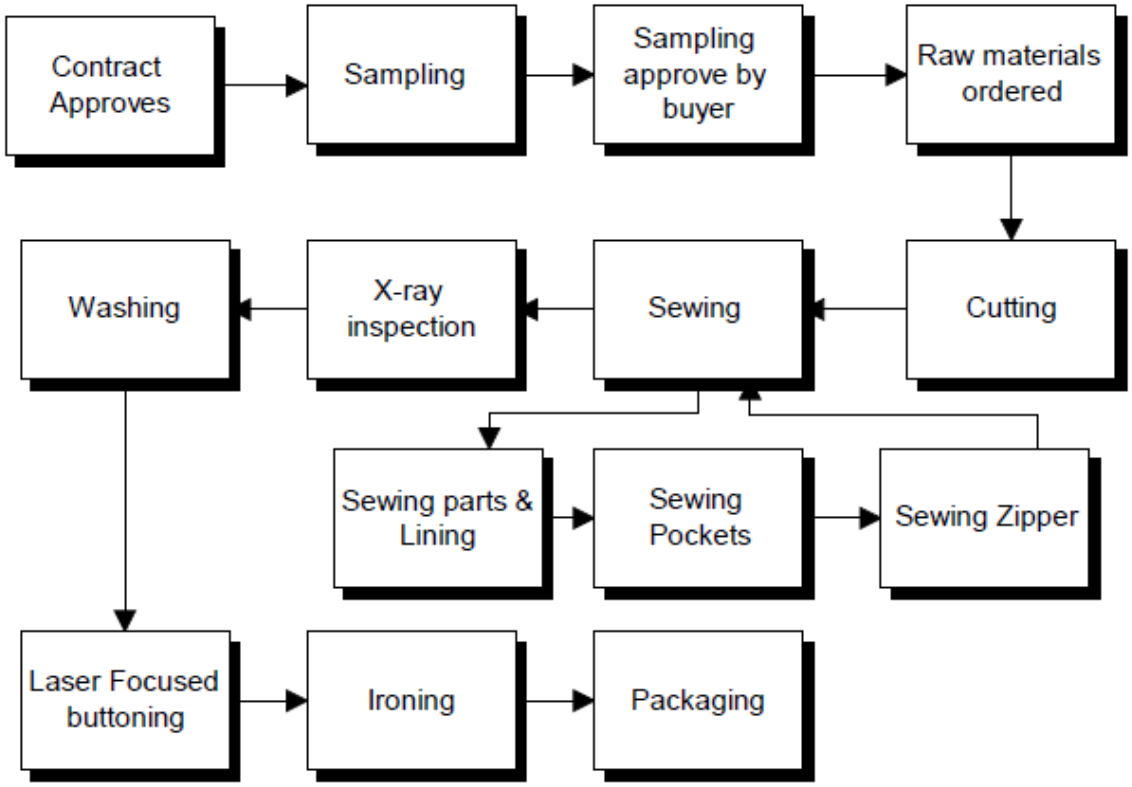
- Bottleneck' (constraint m/c or mp or operation that reduces productivity) have to find out
- Find same m/c / m/c condition such as gauge/pressure feet/device/thread etc.

EXAMPLE-LINE BALANCING FOR ITEAM T-SHIRT

SL NO.	OPERATIONS	M/C /HELPER	MP	IMBALANCED CAPACITY/HR	BALANCED CAPACITY/HR	BALANCING OPERATION
1	Front n back n 1st shoulder join with / without tape	4TH/OL	2	162	162	NO
2	Neck binding	FLAT BED	1	160	160	NO
3	2nd Shoulder inner tack	SNLS	1	164	164	NO
4	2nd shoulder join with / without tape	4TH/OL	1	180	160	BALANCE (6) 20 PCs/HR
5	Secure 2nd shoulder @ neck	SNLS	1	162	162	NO
6	Sleeve n body match n insert sleeve	4TH/OL	2	140	160	BALANCE WITH (4)
7	Care Label Make	SNLS	1	161	161	NO
8	Side/ sleeve Seams inc. care label and Gmts turns	4TH/OL	2	160	160	NO
9	Sleeve hem	2TFL	2	130	160	BALANCE WITH (10)
10	Bottom Hem	2TFL	1	190	160	BALANCE (9) 30 PCs/HR
11	Thread trims & sticker remove	MNL	1	165	165	NO

Chapter-7
Sewing Section

7.0: Flow Chart of Sewing Section



7.1: Sewing Section Working Required Man Power

Line	Operator	Helper	Iron Man	Total M.P	W.H	Machine Used
1	37	23	1	61	11	37
2	24	16	1	41	11	24
3	24	15	1	40	11	24
4	21	10	1	32	11	21
5	25	13	1	39	11	25
6	18	10	1	29	11	18
7	28	13	1	42	11	28
8	28	10	2	40	11	28
9	28	10	2	40	11	38
10	17	10	1	28	11	18
Total	**250**	**130**	**12**	**392**		**261**

7.2: Machine Specification

Plain machine specification:

- Brand name: Juki, Brother.
- Model: DDL8700-7, S-7200B-403.
- Needle: 1(DB*1).
- Origin: China, Japan.
- Quantity: 341pieces.
- R.P.M.: 5000(maximum).
- Capacity: As per operator efficiency.
- Pressure foot: 10 m. m. (standard). Max- 13 m. M
- Max stitch length: 4 m. M
- Lubricating oil grade:7.
- Weight: 115 kg/253lbs.
- Motor type: Servo.
- Bobbin:1.

Figure: Plain Machine

Over lock machine specification:

- Brand name: Juki, Yamato.
- Model: Mo-6900 Needle: 2(DC).
- Origin: Japan.
- Quantity: 224pieces.
- R.P.M.:7500(maximum).
- Capacity: As per operator efficiency.
- Pressure foot: 6 m. M
- Max stitch length: 1.0-4.0 m. M
- Lubricating oil grade:28.
- Weight: 26kg.
- Motor type: Clutch.
- Lopper: 2,3.

Figure: Over lock Machine

Flat lock machine specification:

- Brand name: Pegasus, Juki.
- Model: W-2600 series Needle: 2, 3, 4(UY128).
- Origin: Japan.
- Quantity: 200pieces.
- R.P.M.:6000(maximum).
- Capacity: As per operator efficiency.
- Pressure foot: binding m. M
- Max stitch per inch:13-14.
- Lubricating oil grade:28-30.
- Weight: 42kg.
- Motor type: Servo.

Figure: Flat lock Machine

Button Sewing Machine

- Brand name: Juki
- Origin: China
- Model Name:LK-1903BNB

Figure: Button Sewing Machine

Bar tacking Sewing Machine:

- Brand name: Juki
- Origin: China
- Model Name: LBH-1790AN

Figure: Bar tacking Sewing Machine

Buttonholing Sewing Machine

- Brand Name: Juki
- Origin: China
- Model Name: LBH-1790A

Figure: Buttonholing Sewing Machine

7.3: Responsibilities of a Floor in Charge:

- ✓ Man, machine &accessories input.
- ✓ Line setting.
- ✓ Elimination of worker.
- ✓ Adding operator by analysis shipment date.
- ✓ Maintain line plan.
- ✓ Checking all the line very carefully.
- ✓ Giving information about cutting in finishing section.
- ✓ Adjust the quantity of a garment.
- ✓ To give easier way for sewing of a new style garment.
- ✓ Operators adding by contact with planning section as per requirement.
- ✓ Take interview of a new operator to give his/her right position to work.
- ✓ Quality check.
- ✓ To do anything for getting high output production rate and improve efficiency.

7.4: Responsibilities of a Supervisor

- ✓ To be informed about the style.
- ✓ Sample collection from cutting section.
- ✓ Collect input from cutting.
- ✓ Man &machine layout.
- ✓ Identification of bottleneck point
- ✓ Accessories collection from store.
- ✓ Line balancing.
- ✓ To be aware of line upgrade information.
- ✓ Target fills up.
- ✓ Solve all problems during sewing.
- ✓ Hourly production sheet fillip.
- ✓ Log sheet fill-up.
- ✓ Motivate the operators.
- ✓ Discipline maintains.
- ✓ Quality maintains.
- ✓ Information of product &sewing quantity.
- ✓ To be informed of shipment information.

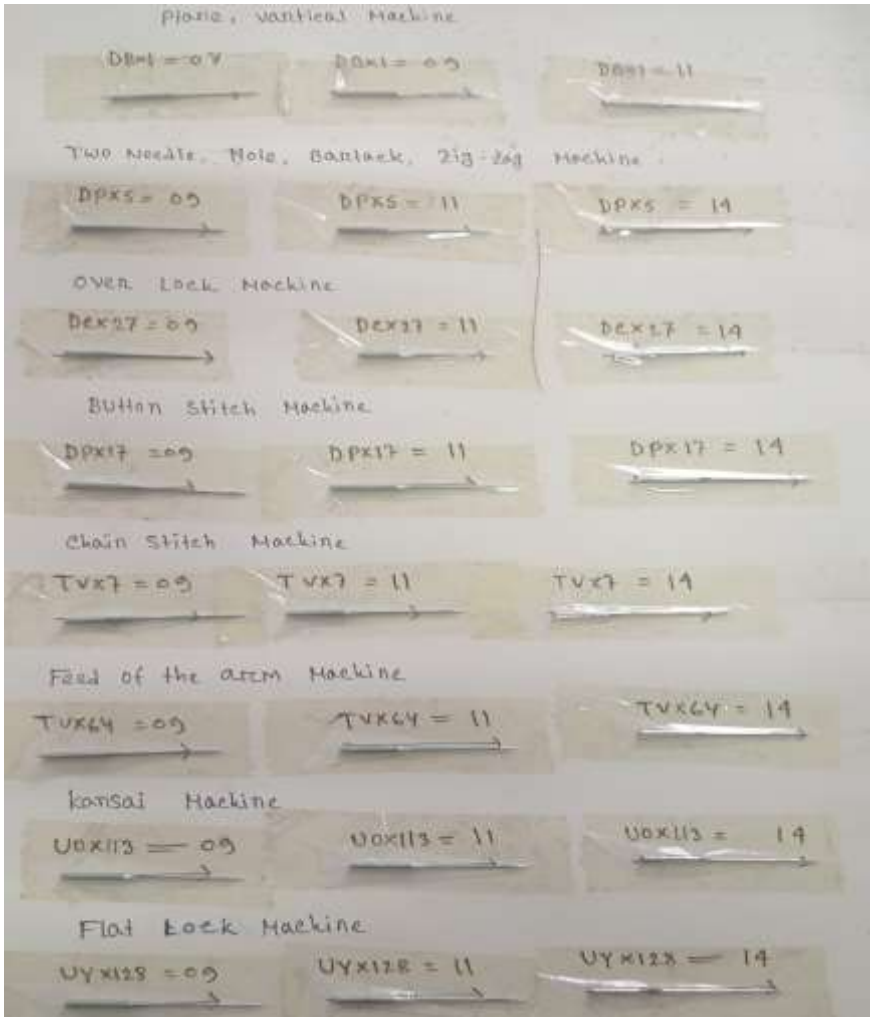
7.5: Responsibilities of Sewing in Charge

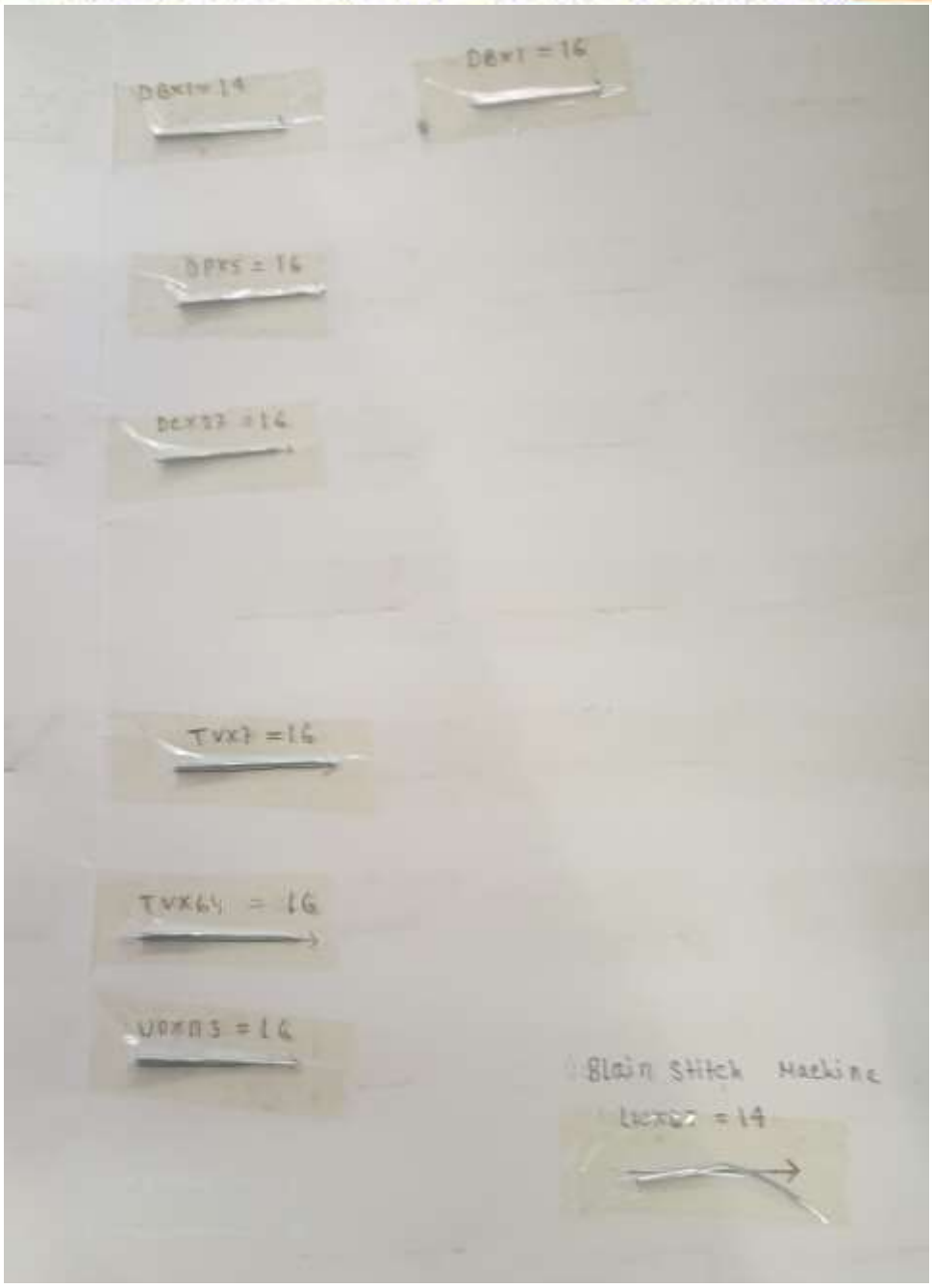
- ✓ Receives cutting fabrics according to style, color & size from cutting section.
- ✓ Prepare sewing lines of floor & report to A. G. M. in three time every day.
- ✓ Distribute the cutting fabrics according to style, size & color to the respective line supervisors.
- ✓ Control the sewing in charge Q.C., Asst. Supervisor, quality inspector, operator & helper.
- ✓ Maintain floor discipline &cleanliness.
- ✓ Any other works as & when required by the management.

7.6: Defect During Sewing

- ✓ Broken stitch.
- ✓ Skip/Drop stitch.
- ✓ Side seam open.
- ✓ Down stitch.
- ✓ Point up down.
- ✓ Joint uptown.
- ✓ Label mistake.
- ✓ Size mistake.
- ✓ Tuck mistake.
- ✓ Missing tuck.
- ✓ Puckering.
- ✓ Shoulder uptown.
- ✓ Sleeve uptown.
- ✓ Wrong size label joint.
- ✓ Needle mark.
- ✓ Iron problem.
- ✓ Print spot.
- ✓ Oil spot.
- ✓ Dirty spot.
- ✓ Twisting problem.
- ✓ Uneven placket box.
- ✓ Stitch open.
- ✓ Wrong trims.
- ✓ Faulty trims.
- ✓ Slanted.
- ✓ Fullness.
- ✓ Pleat.

7.7: Needles Used in The Sewing Section of the Knitting

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Dext = 14
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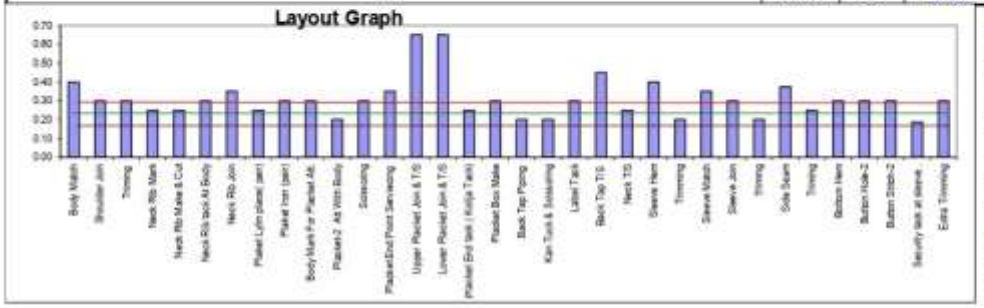
Blain Stitch Machine
Lext2 = 14

7.8: Balance Layout-1

Balance Layout

Style No:	IFORE SET		SAM	Avg	10%+	0.330	Max	0.65
Buyer:	H&M		12.90	0.300	10%-	0.27	Min	0.19
Description:	Boyes T-Shirt with front placket			Efficiency	50%	60%	70%	80%
				Target	100	120	140	160

S/N	M/C	Guide/Presser foot	Folder with Measurement	Section	Operation	SAM	Tar/Hr	TAKT	Man Power	Remarks
1	HP				Body Match	0.400	150	0.40	1	150
2	OL4				Shoulder Join	0.300	200	0.30	1	200
3	HP				Trimmg	0.300	200	0.30	1	200
4	HP				Neck Rib Mark	0.250	240	0.25	1	240
5	LS1				Neck Rib Make & Cut	0.250	240	0.25	1	240
6	LS1				Neck Rib tack At Body	0.600	100	0.30	2	200
7	OL4				Neck Rib Join	0.350	171	0.35	1	171
8	HP				Plaket Lylin place(pair)	0.250	240	0.25	1	240
9	IRON				Plaket Iron (pair)	0.300	200	0.30	1	200
10	HP				Body Mark For Placket Att.	0.600	100	0.30	2	200
11	LS1				Placket-2 Att With Body	0.400	150	0.20	2	300
12	HP				Scissoring	0.300	200	0.30	1	200
13	HP				Placket End Point Serviecing	0.350	171	0.35	1	171
14	LS1				Upper Placket Join & T/S	0.650	92	0.65	1	92
15	LS1				Lower Placket Join & T/S	0.650	92	0.65	1	92
16	LS1				Placket End tack (Kolija Tack)	0.250	240	0.25	1	240
17	LS1				Placket Box Make	0.300	200	0.30	1	200
18	FL				Back Tap Piping	0.200	300	0.20	1	300
19	LS1				Kan Tuck & Scissoring	0.200	300	0.20	1	300
20	LS1				Label Tack	0.300	200	0.30	1	200
21	LS1				Back Tap T/S	0.450	133	0.45	1	133
22	FL				Neck T/S	0.250	240	0.25	1	240
23	FL				Sleeve Hem	0.400	150	0.40	1	150
24	HP				Trimmng	0.200	300	0.20	1	300
25	HP				Sleeve Match	0.350	171	0.35	1	171
26	OL4				Sleeve Join	0.600	100	0.30	2	200
27	HP				Trimmg	0.200	300	0.20	1	300
28	OL4				Side Seam	0.750	80	0.38	2	160
29	HP				Trimmg	0.250	240	0.25	1	240
30	FL				Bottom Hem	0.300	200	0.30	1	200
31	BH				Button Hole-2	0.300	200	0.30	1	200
32	BS				Button Stitch-2	0.300	200	0.30	1	200
33	LS1				Security tack at sleeve	0.750	80	0.19	4	320
34	HP				Extra Trimming	0.600	100	0.30	2	200
Total						12.900	185	10.56	43	



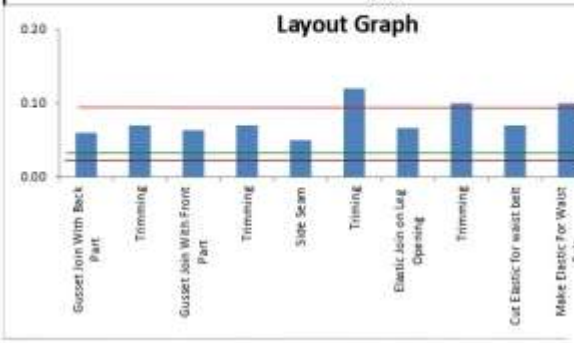
M/C	No of Operator
LS1	16
LS2	0
FOA	0
BH	1
OL4	6
BT	0
FL	4
BS	1
IRON	1
HP	14
Total	43
Operator	28
HP	14
Iron	1
M/C	28

Balance Layout-2

Balance Layout

Style No:	Brief	SAM	Avg	10%+	0.076	Max	0.12
Buyer:	Primark	2.750	0.069	10%-	0.06	Min	0.05
Description:	Brief		Efficiency	80%	85%	90%	95%
			Target	698	742	785	829

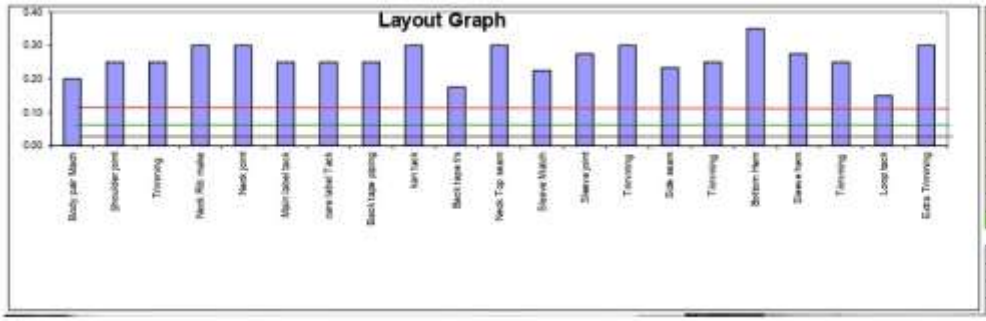
S/N	M/C	Guide/Presser foot	Folder with Measurement	Section	Operation	SAM	Tar/Hr	TAKT	Man Power	Remarks
1	OL4				Gusset Join With Back Part	0.18	333	0.06	3	
2	HP				Trimming	0.07	857	0.07	1	
3	OL4				Gusset Join With Front Part	0.19	316	0.06	3	
4	HP				Trimming	0.07	857	0.07	1	
5	OL4				Side Seam	0.20	300	0.05	4	
6	HP				Trimming	0.12	500	0.12	1	
7	OL4				Elastic Join on Leg Opening	0.20	300	0.07	3	
8	HP				Trimming	0.20	300	0.10	2	
9	HP				Cut Elastic for waist belt	0.07	857	0.07	1	
10	LS1				Make Elastic For Waist Belt	0.10	600	0.10	1	
11	HP				Mark Elastic For Waist Belt Join(3Point)	0.14	429	0.07	2	Buyer Requirement
12	OL4				Waist Elastic Join	0.24	250	0.06	4	
13	LS1				Label Att	0.13	462	0.07	2	
14	FL				Waist Belt T/S	0.19	316	0.06	3	
15	HP				Trimming	0.19	316	0.06	3	
16	FL				Leg Opening Top Seam	0.20	300	0.07	3	
17	HP				Trimming	0.26	231	0.09	3	
Total						2.750	443	1.25	40	



M/C	No of Operator
LS1	3
LS2	0
FOA	0
KAN	0
OL4	17
ZZ	0
FL	6
BS	0
IRON	0
HP	14
Total	40
Operator	26
HP	14
Iron	0
M/C	26

Balance Layout-3

Style No:					SAM	Avg	10%+	0.275	Max	0.35
Buyer:	Zalando				8.000	0.250	10%-	0.23	Min	0.15
Description:	Basic T-Shirt					Efficiency	50%	60%	70%	80%
						Target	120	144	168	192
S/N	M/C	Guide/Presser foot	Folder with Measurement	Section	Operation	SAM	Tar/Hr	TAKT	Man Power	Remarks
1	HP				Body pair Mach	0.40	150	0.20	2	
2	OL-4				Shoulder joint	0.25	240	0.25	1	
3	HP				Trimming	0.25	240	0.25	1	
4	LS1				Neck Rib make	0.30	200	0.30	1	
5	OL-4				Neck joint	0.30	200	0.30	1	
6	LS1				Main label tack	0.25	240	0.25	1	
7	LS1				care label Tack	0.25	240	0.25	1	
8	FL2				Back tape piping	0.25	240	0.25	1	
9	LS1				kan tack	0.30	200	0.30	1	
10	OL-4				Back tape t/s	0.35	171	0.18	2	
11	FL2				Neck Top seam	0.30	200	0.30	1	
12	HP				Sleeve Match	0.45	133	0.23	2	
13	OL-4				Sleeve joint	0.55	109	0.28	2	
14	HP				Trimming	0.30	200	0.30	1	
15	OL-4				Side seam	0.70	86	0.23	3	
16	HP				Trimming	0.50	120	0.25	2	
17	FL3				Bottom Hem	0.35	171	0.35	1	
18	FL3				Sleeve hem	0.55	109	0.28	2	
19	HP				Trimming	0.50	120	0.25	2	
20	LS1				Loop tack	0.30	200	0.15	2	
21	HP				Extra Trimming	0.60	100	0.30	2	
Total						8.000	175	5.43	32	



M/C	No of Operator
LS1	6
OL-4	9
FL2	2
FL3	3
ZZ	0
BH	0
BTK	0
BS	0
IRON	0
HP	12
Total	32

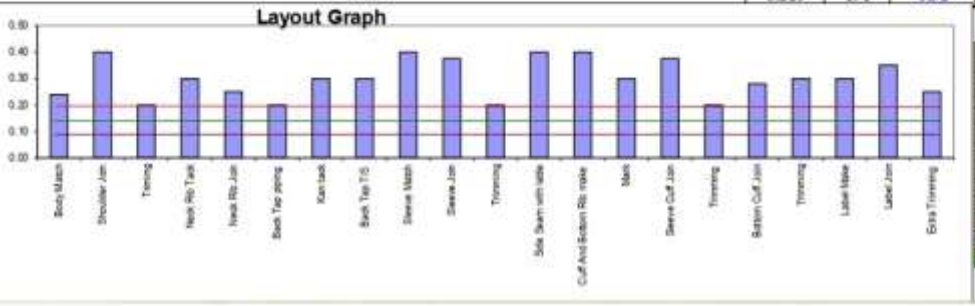
Operator	20
HP	12
Iron	0
M/C	20

Balance Layout-4

Balance Layout

Style No:		SAM	Avg	10%+-	0.335	Max	0.40
Buyer:	Sfera	8.220	0.304	10%-	0.27	Min	0.20
Description:	T-Shirt With long sleeve & Bottom Cuff		Efficiency	50%	60%	70%	75%
			Target	99	118	138	148

S/N	M/C	Guide/Presser foot	Folder with Attachment	Section	Operation	SAM	Tar/Hr	TAKT	Man Power	Remarks
1	LS1				Decorative V-Shape tack	0.35	171	0.35	1	
2	ZZ				V-Shape Zigzag	0.40	150	0.40	1	
3	MAN				Body Match	0.24	250	0.24	1	
4	OL4				Shoulder Join	0.40	150	0.40	1	
5	MAN				Triming	0.20	300	0.20	1	
6	LS1				Neck Rib Tack	0.30	200	0.30	1	
7	OL4				Neck Rib Join	0.25	240	0.25	1	
8	FL				Back Tap piping	0.20	300	0.20	1	
9	LS1				Kan tack	0.30	200	0.30	1	
10	LS1				Back Tap T/S	0.30	200	0.30	1	
11	MAN				Sleeve Match	0.40	150	0.40	1	
12	OL4				Sleeve Join	0.75	80	0.38	2	
13	MAN				Trimming	0.20	300	0.20	1	
14	OL4				Side Seam with lable	0.80	75	0.40	2	
15	LS1				Cuff And Bottom Rib make	0.40	150	0.40	1	
16	MAN				Mark	0.30	200	0.30	1	
17	OL4				Sleeve Cuff Join	0.75	80	0.38	2	
18	MAN				Trimming	0.20	300	0.20	1	
19	OL4				Bottom Cuff Join	0.28	214	0.28	1	
20	MAN				Trimming	0.30	200	0.30	1	
21	LS1				Label Make	0.30	200	0.30	1	
22	LS1				Label Join	0.35	171	0.35	1	
23	MAN				Extra Trimming	1.00	60	0.25	4	
Total						8.220	191	6.32	27	



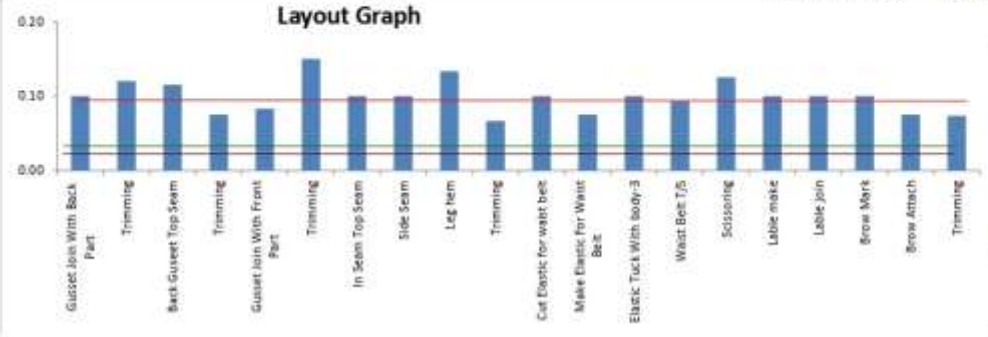
M/C	No of Operator
LS1	6
Zigzag	0
FOA	0
KAN	0
OL4	9
BH	0
FL	1
BS	0
IRON	0
MAN	11
Total	27

Balance Layout-5

Balance Layout

Style No:	Edith Star Knit Panties(17079)		SAM	Avg	10%+	0.106	Max	0.15
Buyer:	Hellenic		4.350	0.097	10%-	0.09	Min	0.07
Description:	Knit Panties			Efficiency	50%	60%	70%	80%
				Target	310	372	434	497

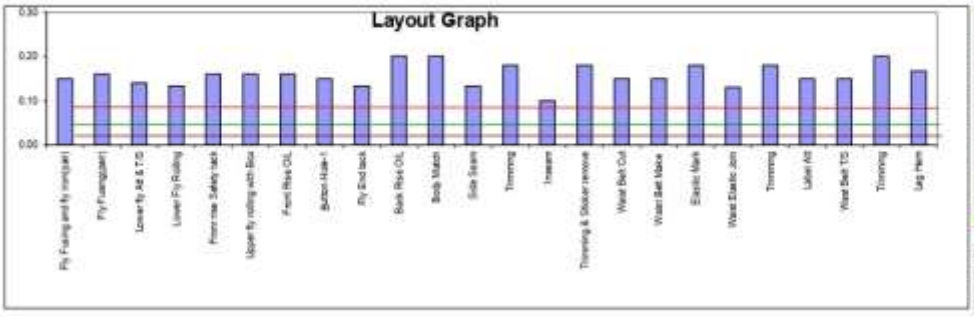
S/N	M/C	Guide/Presser foot	Folder with Measurement	Section	Operation	SAM	Tar/Hr	TAKT	Man Power	Remarks
1	OL4				Gusset Join With Back Part	0.30	200	0.10	3	
2	HP				Trimming	0.12	500	0.12	1	
3	FL				Back Gusset Top Seam	0.23	261	0.12	2	
4	HP				Trimming	0.15	400	0.08	2	
5	OL4				Gusset Join With Front Part	0.25	240	0.08	3	
6	HP				Trimming	0.15	400	0.15	1	
7	FL				In Seam Top Seam	0.20	300	0.10	2	
8	OL4				Side Seam	0.30	200	0.10	3	
9	FL				Leg hem	0.40	150	0.13	3	
10	HP				Trimming	0.20	300	0.07	3	
11	HP				Cut Elastic for waist belt	0.10	600	0.10	1	
12	ZZ				Make Elastic For Waist Belt	0.15	400	0.08	2	
13	LS1				Elastic Tuck With body-3	0.30	200	0.10	3	
14	FL				Waist Belt T/S	0.28	214	0.09	3	
15	HP				Scissoring	0.25	240	0.13	2	
16	LS1				Lable make	0.30	300	0.10	2	
17	LS1				Lable join	0.20	300	0.10	2	
18	HP				Brow Mark	0.20	300	0.10	2	
19	LS1				Brow Attach	0.15	400	0.08	2	
20	HP				Trimming	0.22	273	0.07	3	
Total						4.350	300	1.99	45	



M/C	No of Operator
LS1	9
LS2	0
FOA	0
KAN	0
OL4	9
ZZ	2
FL	10
BS	0
IRON	0
HP	15
Total	45
Operator	30
HP	15
Iron	0
M/C	30

Balance Layout-6

Style No:					SAM	Avg	10%+	0.171	Max	0.20
Buyer:	Hipercor				6.620	0.156	10%-	0.14	Min	0.10
Description:	Knit Short Pant					Efficiency	50%	60%	70%	85%
						Target	193	231	270	327
S/N	M/C	Guide/Presser foot	Folder with Measurement	Section	Operation	SAM	Tar/Hr	TAKT	Man Power	Remarks
1	IRON				Fly Fusing and fly iron(pair)	0.30	200	0.15	2	400
2	MAN				Fly Fusing(pair)	0.24	250	0.16	1.5	375
3	LS1				Lower fly Art & T/S	0.35	171	0.14	3.0	429
4	LS1				Lower Fly Rolling	0.20	300	0.13	1.5	450
5	LS1				Front rise Safety tack	0.24	250	0.16	1.5	375
6	LS1				Upper fly rolling with Box	0.32	188	0.16	2	375
7	OL-5				Front Rise O/L	0.24	250	0.16	1.5	375
8	BH				Button Hole-1	0.15	400	0.15	1	400
9	LS1				Fly End tack	0.20	300	0.13	1.5	450
10	OL4				Back Rise O/L	0.20	300	0.20	1	300
11	MAN				Body Match	0.20	300	0.20	1	300
12	OL4				Side Seam	0.40	150	0.13	3	450
13	MAN				Trimming	0.18	333	0.18	1	333
14	OL4				Inseam	0.20	300	0.10	2	600
15	MAN				Trimming & Sticker remove	0.18	333	0.18	1	333
16	MAN				Waist Belt Cut	0.15	400	0.15	1	400
17	LS1				Waist Belt Make	0.15	400	0.15	1	400
18	MAN				Elastic Mark	0.18	333	0.18	1	333
19	OL4				Waist Elastic Join	0.26	231	0.13	2	462
20	MAN				Trimming	0.18	333	0.18	1	333
21	LS1				Label Att	0.15	400	0.15	1	400
22	FL				Waist Belt T/S	0.30	200	0.15	2	400
23	MAN				Trimming	0.20	300	0.20	1	300
24	FL				Leg Hem	0.50	120	0.17	3	360
25	BS				Button Att-1	0.15	400	0.15	1	400
26	MAN				Extra Trimming	0.80	75	0.18	4.5	338
Total						6.620	278	4.12	43	



M/C	No of Operator
LS1	11
BH	1
OL-5	1.5
KAN	0
ZZ	0
OL4	8
FL	5
BS	1
IRON	2
MAN	13
Total	42.5

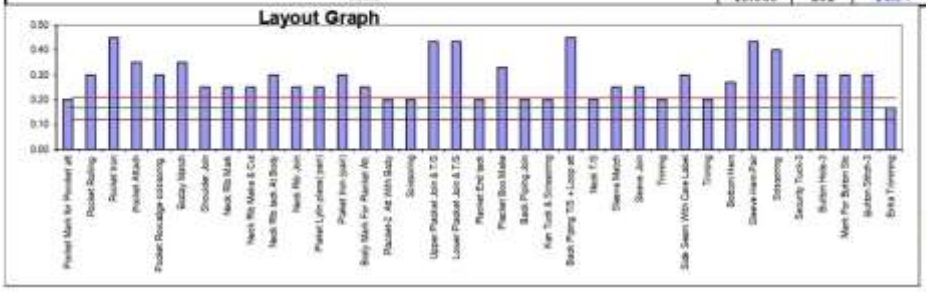
Operator	27.5
HP	13
Iron	2
M/C	27.5

Balance Layout-7

Balance Layout

Style No:	Long T-Shirt(W20UTOPCOMBI)	SAM	Avg	10%+	0.325	Max	0.45
Buyer:	Hipercore	13.00	0.295	10%-	0.27	Min	0.17
Description:	T-Shirt With front pocket		Efficiency	50%	60%	70%	80%
			Target	102	122	142	162

S/N	M/C	Guide/Presser foot	Folder with Measurement	Section	Operation	SAM	Tar/Hr	TAKT	Man Power	Remarks
1	HP				Pocket Mark for Pocket att	0.400	150	0.20	2	300
2	FL				Pocket Rolling	0.150	400	0.30	0.5	200
3	IRON				Pocket Iron	0.450	133	0.45	1	133
4	LS1				Pocket Attach	0.700	86	0.35	2	171
5	HP				Pocket Rowadge scissoring	0.300	200	0.30	1	200
6	HP				Boday Match	0.350	171	0.35	1	171
7	OL4				Shoulder Join	0.250	240	0.25	1	240
8	HP				Neck Rib Mark	0.250	240	0.25	1	240
9	LS1				Neck Rib Make & Cut	0.250	240	0.25	1	240
10	LS1				Neck Rib tack At Body	0.600	100	0.30	2	200
11	OL4				Neck Rib Join	0.250	240	0.25	1	240
12	HP				Plaket Lyin place(pair)	0.250	240	0.25	1	240
13	IRON				Plaket Iron (pair)	0.300	200	0.30	1	200
14	HP				Body Mark For Placket Att.	0.250	240	0.25	1	240
15	LS1				Placket-2 Att With Body	0.400	150	0.20	2	300
16	HP				Scissoring	0.200	300	0.20	1	300
17	LS1				Upper Placket Join & T/S	0.650	92	0.43	1.5	138
18	LS1				Lower Placket Join & T/S	0.650	92	0.43	1.5	138
19	LS1				Placket End tack	0.200	300	0.20	1	300
20	LS1				Placket Box Make	0.330	182	0.33	1	182
21	FL	Folder			Back Piping Join	0.200	300	0.20	1	300
22	LS1				Kan Tuck & Scissoring	0.200	300	0.20	1	300
23	LS1				Back Piping T/S + Loop att	0.450	133	0.45	1	133
24	FL				Neck T/S	0.200	300	0.20	1	300
25	HP				Sleeve Match	0.250	240	0.25	1	240
26	OL4				Sleeve Join	0.500	120	0.25	2	240
27	HP				Trimmig	0.200	300	0.20	1	300
28	OL4				Side Seam With Care Label	0.600	100	0.30	2	200
29	HP				Trimmig	0.200	300	0.20	1	300
30	FL				Bottom Hem	0.270	222	0.27	1	222
31	FL				Sleeve Hem Pair	0.650	92	0.43	1.5	138
32	HP				Scissoring	0.400	150	0.40	1	150
33	LS1				Security Tuck-3	0.300	200	0.30	1	200
34	BH				Button Hole-3	0.300	200	0.30	1	200
35	HP				Mark For Button Sti	0.300	200	0.30	1	200
36	BS				Button Stitch-3	0.300	200	0.30	1	200
37	HP				Extra Trimming	0.500	120	0.17	3	360
Total						13.000	202	10.57	46	



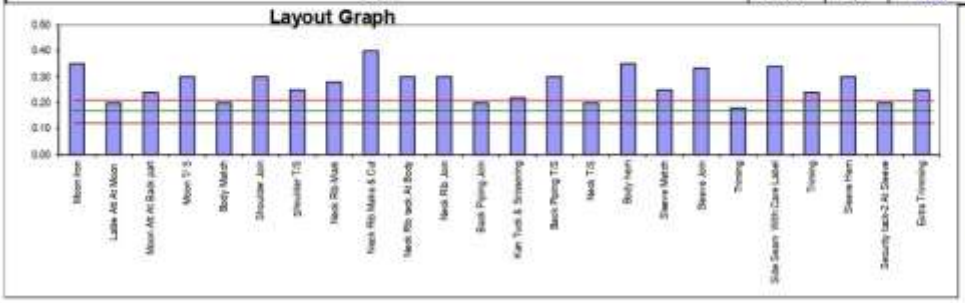
M/C	No of Operator
LS1	15
LS2	0
FOA	0
BH	1
OL4	6
BT	0
FL	5
BS	1
IRON	3
HP	16
Total	44
Operator	28
HP	16
Iron	3
M/C	28

Balance Layout-8

Balance Layout

Style No:	Short Sleeve T-Shirt With Side Band	SAM	Avg	10%+	0.301	Max	0.40
Buyer:	Hipercore	8.06	0.273	10%-	0.25	Min	0.18
Description:	T-Shirt With Back Moon,Side Slit with Tap Att		Efficiency	50%	60%	70%	80%
			Target	110	132	154	176

S/N	M/C	Guide/Presser foot	Folder with Measurement	Section	Operation	SAM	Tar/Hr	TAKT	Man Power	Remarks
1	IRON				Moon Iron	0.350	171	0.35	1	171
2	LS1				Lable Att At Moon	0.200	300	0.20	1	300
3	LS1				Moon Att At Back part	0.240	250	0.24	1	250
4	LS2				Moon T/S	0.300	200	0.30	1	200
9	HP				Body Match	0.200	300	0.20	1	300
10	OL4				Shoulder Join	0.300	200	0.30	1	200
11	FL				Shoulder T/S	0.250	240	0.25	1	240
12	HP				Neck Rib Mark	0.280	214	0.28	1	214
13	LS1				Neck Rib Make & Cut	0.400	150	0.40	1	150
14	LS1				Neck Rib tack At Body	0.450	133	0.30	1.5	200
15	OL4				Neck Rib Join	0.300	200	0.30	1	200
25	FL	Folder			Back Piping Join	0.200	300	0.20	1	300
26	LS1				Kan Tuck & Scissoring	0.220	273	0.22	1	273
27	LS1				Back Piping T/S	0.300	200	0.30	1	200
28	FL				Neck T/S	0.200	300	0.20	1	300
29	FL				Body hem	0.350	171	0.35	1	171
30	HP				Sleeve Match	0.250	240	0.25	1	240
31	OL4				Sleeve Join	0.500	120	0.33	1.5	180
32	HP				Trimmig	0.180	333	0.18	1	333
33	OL4				Side Seam With Care Label	0.850	71	0.34	2.5	176
34	HP				Trimmig	0.240	250	0.24	1	250
39	FL				Sleeve Hem	0.300	200	0.30	1	200
43	LS1				Security tack-2 At Sleeve	0.200	300	0.20	1	300
44	HP				Extra Trimming	1.000	60	0.25	4	240
Total						8.060	216	6.48	30	



M/C	No of Operator
LS1	7.5
LS2	1
FOA	0
BH	0
OL4	6
BT	0
FL	5
BS	0
IRON	1
HP	9
Total	29.5
Operator	19.5
HP	9
Iron	1
M/C	19.5

Chapter-8
Garments Finishing

8.0: All Process of Finishing Section

Figure-1: Finishing Section

Figure-2: Finishing Section

8.1: Flow Chart of Garment Finishing Process

Finishing input (style, color & size wise)

↓

Initial quality check

↓

Spot Removing

↓

Ironing/Pressing

↓

Inspection

↓

Hangtag

↓

Get up change

↓

Folding

↓

Poly

↓

Bar code (buyer wise sticker)

↓

Metal check

↓

Cartooning/ Packaging to box

↓

Inspection of ready to ship goods

↓

Dispatch shipment

8.2: All The processes of Finishing

The processes of Finishing have discussed in the below table:

Processes	Procedure
1. Finishing Input	Here, sewn garments are received for finishing the garments.
2. Initial quality check	Sewn garments are checked here by the quality controller. If found major sewing problems then garments sent again to the sewing section for rectification
3. Spot removing	Sometimes garments contain various types of spots which removes here carefully.
4. Ironing or pressing	It's one of the important processes in garment finishing. Here garments are ironed by following the measurement chart of those garments
5. Inspection	After completing ironing or finishing, garments are inspected again here by the quality controller to confirm the correct measurement of the apparel.
6. Hangtag attaching	In this section, the hangtag has to attach to the garments.
7. Folding	After completing all the above processes, garments are folded here.
8. Poly	Garments are poly-bagged here to keep the garments dust, dirt, and other impurities free. send the garments safely to the buyer
9. Metal check	In this section, garments should be passed through a metal detector machine to identify metal lies in the garments.
10. Packaging or cartooning	Finally, all the garments should pack to send the garments safely to the buyer.
11. Inspection & Shipment	It's time to check the final inspection and then go for the dispatch shipment.

8.3: Objectives of the Finishing:

- ✓ Improve the dimensional stability of the fabric
- ✓ Modify the handle of fabric
- ✓ Improve the appearance of fabric
- ✓ Improve the durability of the fabric
- ✓ Modify the serviceability of the fabric

8.4: Process Description Finishing

1. Goods Received from Sewing Section:

At first, finished garments are received from sewing section as per order quantity. Good received from sewing section is the first step to finishing section.

2. Thread Sucking by Machine:

In this step extra lose sewing thread are sucking by sucking machine in garments. Threads are suckered by two systems. One by done by hand which is manual system and the other is done by sucking machine.

3. Ironing:

Ironing is a finishing process done by a cloth to heat and pressure with or without steam to remove creases and to impart a flat appearance to garments. Ironing process is also called as pressing process. After completing ironing, garments have to be folded.

Figure: Ironing process

5. Measurement Check by QC:

When ironing process running that time also check measurement of garments. During the ironing process measurement is also check out by the QC.

6. Attach Price Tags and Accessories:

After above process, different types of tags and accessories are attached with the garments as per buyer comment. For an export order, must attach price tags with the garments.

7. Metal Detection:

Garments are passed through into the metal detection m/c for metal check. Now most of the buyer recommended using metal detector for garments more safety. To use metal detectorfor kid's item is must.

Figure: Needle Detector Machine

8. Folding:

Garments are folded according to buyer directions in a standard area. There are fore types of folding in garments. They are as follows-

a. Stand up
b. Semi stand up
c. Flat back
d. Hanger pack.

8. Packing:

Figure: Packing Aria (Defect)

Figure: Packing Aria

After folding garments are ready for packing. The size of polythene is varying according to the size, garments ratio. Before packing it is needed to ensure the placement of sticker in proper place.

Garments Packing Process

9. Assortment:

After completing the packing, it must be placed the garments in a predetermined packed by sorting according to the size and color is called assortment.

10. Cartooning:

Figure: Cartooning Aria

At last cartooning is done according to buyer comment into the inner boxes and is properly warped by the scotch tape. Some information like carton box no, size, shipping mark, destination is printed on the cartoon.

11. Final Inspection:

Final inspection is an important part and last step of garments finishing. Normally final inspection is made by buyer. Buyer checks the garments according some rules like Accepted Quality Level (AQL).

Chapter-9
Conclusion

9.0: Conclusion

RMG sector in Bangladesh started its modest journey as a small non-traditional sector of export in late 1970s and transformed itself as the country's highest revenue generating sector within three decades, contributing 81% (USD 24.49 billion FY 13-14) of country's total export. During Jul 14 – Feb 15 period, garments export clocked USD 14.44 billion, a 1.91% hike from comparable period last year.

Recent political turmoil has significantly disrupted production supply chain and international buyers are increasingly getting jittery with placing new orders. In the international front, competitors like Pakistan and Vietnam are surging ahead with access to preferential trade agreements. Although favorable labor costs provide competitive strength to Bangladesh, problems remain with inadequate infrastructure and sporadic utility supply.

We have completed our industrial attachment successfully by the grace of Almighty Allah. Industrial attachment will give us our expected destiny of practical life .By the completion of two months of Industrial attachment at MG Niche Flair Ltd. Unit-2, we have got the impression that the factory is one of the most modern export oriented knit composite in Bangladesh. Though it was established only a few years ago, it has earned "very good reputations" for its best performance over many other export oriented textile mills.

Mill is settled with utility to give all convenient supports to the productions for twenty-four hours. KCL has its own water pre-treatment plant & 26,300 cubic feet water reservoirs in its Godnail campus .The Godnail premises has its own power generation plant where 1,900 kw power generators guarantee smooth & uninterrupted power supply to its every operation. However there are some points to be mentioned:

- ✓ During the transportation of the fabric on the dyeing floor & also during the loading of the machine, fabrics are soiled by the contact with floor. This makes the fabric/part of the fabric dirty. It may require more scouring/bleaching agent or may create stain making it faulty.
- ✓ The- dyeing floor is watery most of the time. It should be kept clean all the time.
- ✓ Many times the dosing pipelines are clogged due to the careless dosing of the chemicals. The supervisors should supervise the floor more sincerely.
- ✓ The machine stoppage time should be analyzed & minimized. The maintenance should be carried out when the machine is out of action (wherever possible)