

A Sewing layout which is enlarged with a part of finishing can be more effective to cost reduction of Apparel Industry

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Abstract: In this study, a new model of sewing line is presented in the garments industry by enlargement of sewing line to finishing. The new model was designed on the basis of recorded data and studying of sewing line layout and finishing section. In this concern new model of sewing line has been done in this research work. This research paper tries to extract the common scenario of garments industry by depicting the existing condition of sewing and finishing section. However, this paper proposes a guideline for the studied clothing industry to improve the performance of the sewing line to finishing section. The performance of the new model was determined in terms of reduction of wastages, cost reduction and to evaluate their benefit on a specific application instance. The goal of new model of sewing line is to assist manufacturers to improve their industries operational efficiency and more competitive through the implementation of a new model and techniques of the continuous production process at sewing line enlargement to finishing.

Index Terms: Sewing layout, finishing section, cost reduction, performance, productivity, efficiency, manufacturers, enlargement.



1 INTRODUCTION:

GENERALLY in an industry more focus is given on profit. Through there are different costs involved in cost reduction internally spent by an industry through findings wastages, avoiding and improving faulty work would end in vest reserves [1]. In Today's competitive market environment, cost effectiveness and sustainable productivity are some of the major challenges faced by most of the garments manufacturing industry. To sustain global competition, industries strive to reduce wastages, production time and reduce overall product costs using various tools and techniques. A readymade garments industry consists of three main sectors named Cutting, Sewing and Finishing. A well balanced combination between those sectors can produce more effective production

system. In those points of view and as a part of continuous development a new plan is introduced. Where sewing and finishing are focused for further improvement. A sewing layout which is enlarged with a part of finishing can be more effective. It will reduce amount of defects, material handling cost, inventory, manpower etc. But some challenges can be appeared to make implement it. As it is acknowledged that time is money, if additional time and place are mandatory in a product or service extra money is involved [2]. Therefore, a study was carried out in the garments industry named Masco group located at Gazipura, Dhaka, Bangladesh [3] at sewing line enlargement to finishing section so as to eliminate them for reducing amount of defects, material handling, manpower saving time, improve productivity and cost reduction.

2 FEATURES OF NEW MODEL:

- Adding iron with sewing line
- Adding final quality Responsiveness
- Sound bridge of communication between finishing and sewing
- Final quality will be sewing line output

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LAYOUT DESIGN: LINE

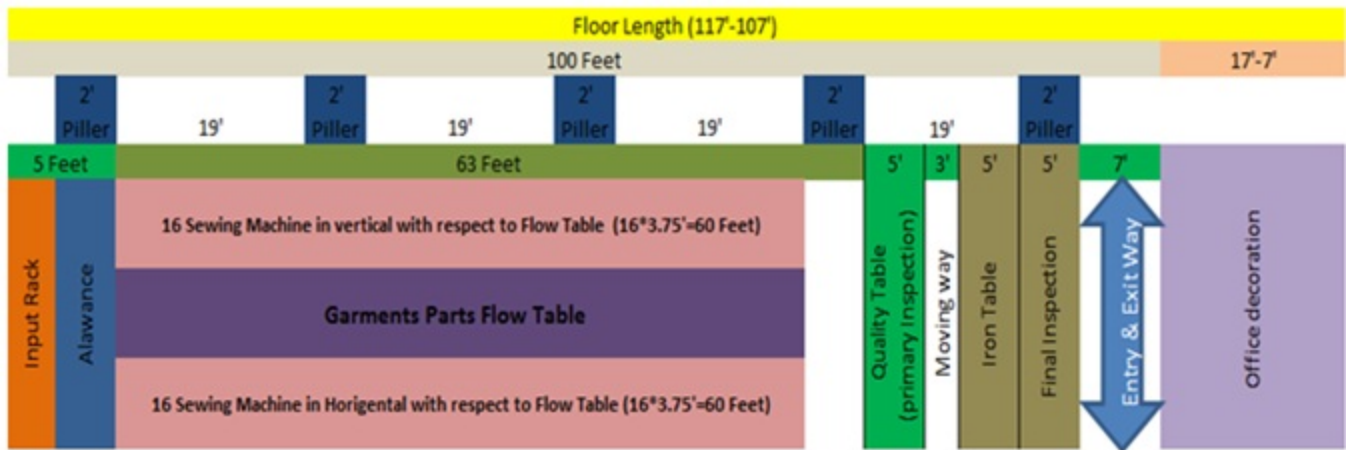


Fig: Model of a new Sewing Line

LAYOUT DESIGN FLOOR

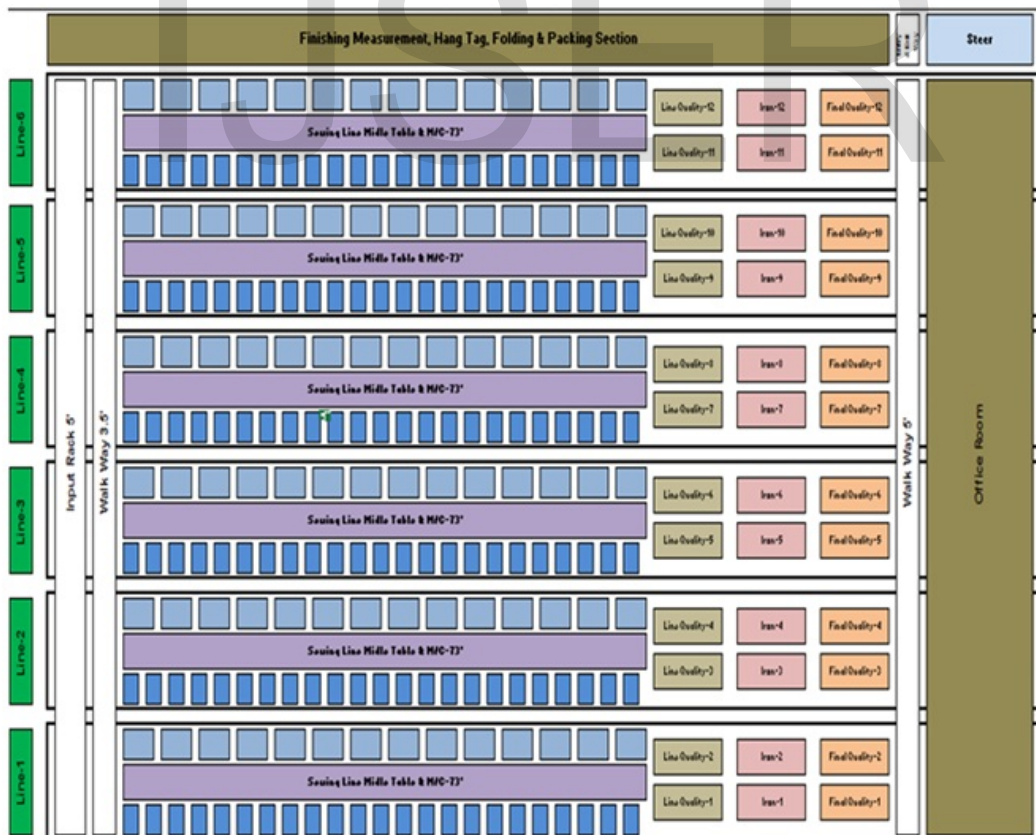


Fig: Model of new production floor

2.1 ADVANTAGES OF NEW MODEL:

- Reduction of material handling.
- Minimization of manpower.
- Quick servicing of alter.
- Quick quality conformation.
- Irons pass Production.
- Convenience on Shipment assumption.
- Easy to close finishing.
- Easy to maintain challan accuracy.
- Improve line balancing.
- To solve any measurement problem instantly.

3 METHODOLOGY:

The apparel industry is particularly dependent on sewing and finishing section who dominate the apparel manufacturing field. The sewing and finishing layout are also the central process of manufacturing. We have made the research work by analyzing different techniques of sewing and finishing layout to reduce amount of defects, material handling, manpower, saving times, improve productivity and cost reduction and profit of factories.

We used quantitative method for analyzing data. Most of the data is primary data, but we also used secondary data as well as. Bangladesh Masco (G-2) factories have been chosen to collect the primary and secondary data.

As several techniques are available for different sewing and finishing layout in apparel industries, so to identify the precise and develop a sewing layout (which is enlarged to finishing quality table) is prepared for Bangladesh Masco group (G-2) as well as this has been applied and find out the factors whether or not new model of sewing line.

4 RESEARCH VARIABLES:

4.1 Initial Variables:

- Layout changing cost
- Cost of present layout will be lost
- To gather knowledge of new working procedure

4.2 Common Variables:

- Tight working space
- Bottleneck problem can be appeared due to sudden received of wash garments

- Sometimes production status may not be resembled due to queue in iron

5 REDUCTION OF WASTAGES:

5.1 7 wastages:

- Defects
- Overproduction
- Transportation
- Waiting
- Inventory
- Motion
- Processing

5.2 Reducing defects:

Some Defects like Point up down, sleeve mistake, level mistake, size mistake, puckering, slanted, skip stitch, broken stitch, wavy, pleat can be appeared after Iron, After finishing iron when it found on final quality inspection necessary quick steps can be initiated to reduce root cause of the defects.

Reducing inventory:

In proposed plan work in progress inventory will be reduced due to combining the sewing section with finishing section. A clustered system can reduce waiting between processes that can reduce inventory in process.

Reducing waiting:

- In proposed plan garments would not waiting a long to go for iron.
- Waiting for servicing alters garments will be reduced.

Reducing transportation:

Manpower and demand of few trolleys will be reduced to transport the garments from line quality to iron section.

Reduction of processes:

Some material handling process like putting garments in basket to go for finishing and receiving garments for iron will be reduced in new sewing process plan.

6 COST REDUCTIONS:

- Over time
- Information gap (Decision delay)
- Deficit of manpower (Material handling cost)
- Spot removing cost
- Maintenance cost
- Manufacturing cost

6.1 Over time reduction:

With the implementation of new proposed production system. Calculation over time reduction: If monthly shipped quantity 676642 pcs then it will be production completed in maximum (basic time 8 + OT 2.33) =10.45 hours which is OT reduced to 3.19-2.45=0.73 (26.83%) of present situation.

Table-1
Section wise monthly OT- 2015

Section	January	February	March	April	May	June	July	Avg.	OT Reduced	Amount
Sewing	2.96	3.39	2.78	1.92	3.75	2.49	1.65	2.71	0.73	161702
Finishing	3.66	2.51	3.89	2.65	5.51	2.67	2.97	3.41		
Quality	3.41	3.29	4.06	2.91	4.93	2.90	2.67	3.45		

6.2 Decision delay: Information gap

Decision delay is the common problem of RMG sector. As a result of decision delay, production is hampered through creating section wise information gap. The new model system will provide smooth production due to no information gap. As a result quick response between production & quality will help to meet TOD.

6.3 Reduction of non-value added work:

With the implementation of new proposed production system. We calculate non-value added work reduction.

Table- 2
Process wise reduction of non-value added work

Process	MP used	Salary with OT	Floor wise amount	
Body received from sewing	1	8,214	Floor	Amount in BDT
Bundling	2	16,428	3rd Floor	66,260
Bundle send for iron	1	8,214	4th Floor	66,260
Final inspection	1	9,404	6th Floor	66,260
Quality controller& finishing in charge	1	24,000	7th Floor	66,260
Total cost minimize	6	66,260	Total Amount	265,040

6.4 Spot removing cost:

With the implementation of new proposed production system. We calculate and compare spot removing cost.

Table-3 Spot removing cost						
Year	Item	Unit	Rate	Total Qty.	Total Cost	Cost Reduced Amount
For 1 Year	SOLVE	LBS	68.292	2269	154955	77478
	GAG	PCS	325	51	16575	8288
	G-1	PCS	200	12	2400	1200
	G-2	PCS	40	18	720	360
	SPOT LIFTER	PCS	245	198	48510	24255
					223160	111580

6.5 Excess shipment:

With the implementation of new proposed production system. We calculate and shown the opportunity of excess shipment.

Table-4 Monthly Average Shipment Status-2015						
Avg. Order Quantity	Avg. Shipped Quantity	Excess Shipped Quantity	Excess Shipped %	If Excess Shipped Quantity Plus 2%	Excess Shipped Value in USD	Excess Shipped Value in BDT
654,865	663,562	8,698	1.33%	13,080	\$ 32,569.2	2,535,512.2

7 DISTRIBUTION OF SMART JOB RESPONSIBILITIES TO QC & IN-CHARGE LEVEL:

In this proposed model:

Finishing & quality both section are equally make to finished goods for shipment garments in a timely manner and it will be maintained a proper TOD plan

Develops and implements methods and procedures to maintain the Material Review Area to ensure that all products are distributed in a timely manner.

MANPOWER ALLOCATION OF FINISHING SECTION (PRESENT SITUATION):3

Table- 5 Manpower allocation list			
Finishing		Quality	
Process	MP	Final Quality	
Body Received	1	Measurement	4
Bundle Man	1	Getup Check	2
Ironing	14	Label Check+ Others	4
Helper	1	Total	68
Plus/Minus/Getup Iron	2	Supervisor Summery	
Spot Man	1	Iron Supervisor	1
Hang Tag	3	Quality Supervisor	1
Shading + NDO	3	Folding Supervisor	1
Sizing	2	Packing Supervisor	1
Folding + Poly	7	Quality Controller	1
Assort Man	6	Finishing In-charge	1
Packing Man	3	Sr. Quality Controller	0.5
Shipping Mark	1	Total	6.5
Manpower Summery			
Finishing & Quality Section			68
Supervisor Summery			6.5
Total Manpower			74.5

8 MANPOWER ALLOCATION OF FINISHING SECTION (PROPOSED):

Table- 6 Manpower allocation list			
Finishing		Quality	
Process	MP	Final Quality	
Body Received	0	Measurement	4
Bundle Man	0	Getup Check	2
Ironing	15	Label Check+Others	4
Helper	0	Total	63
Plus/Minus/Getup Iron	0	Supervisor Summery	
Spot Man	1	Iron Supervisor	1
Hang Tag	3	Quality Supervisor	1
Shading+NDO	3	Folding Supervisor	1
Sizing	2	Packing Supervisor	1
Folding+Poly	7	Quality Controller	1
Assort Man	6	Finishing In-charge	1
Packing Man	3	Sr. Quality Controller	0.5
Shipping Mark	1	Total	5.5
Manpower Summery			
Finishing & Quality Section			63
Supervisor Summery			5.5
Total Manpower			68.5

9 RESULT AND SUMMERY OF COST REDUCTION

Table- 7 Summary of cost reduction		
Cost reduction	Monthly BDT	Yearly BDT
Over time	1,61,702	19,40,424
Information gap: Decision delay	Approximately reduced	
Deficit of manpower (Material handling cost)	2,64,040	31,80,480
Spot removing cost	9,298	1,11,576
Maintenance cost	Approximately reduced	
Manufacturing cost	Approximately reduced	
Total	4,36,040	52,32,480
Excess shipment + 2% of present situation		
Ex cess shipment	4,36,040	3,04,26,144

10 Conclusions:

Process evaluation gives concern to improve further. Process evaluation of present production system provides the thinking of proposed production system. If facing new challenges appeared as successful, hopefully new system will provide greater efficiency, better look and output. New production system may provoke a successful waste reduction process implementation.

Reference:

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