



PIMTE

**Work Standard Development in Loom Machine
A Case Study**



1. About the Client

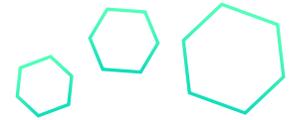
- **The company is a global supplier for plastic woven fabric machinery.**
- **A venture to produce circular looms machines, having big share in Loom machine manufacturing.**

2. Client Challenges

- **Loom machine assembly conveyor line study.**
- **Sub assembly line optimization.**

3. Keypoints

- **Setting up assembly line as per standards.**
- **Sub assembly line validation and planning for unidirectional flow.**

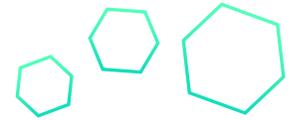


4. Objective

- **Work content measurement using PMTS technique of their identified areas**
- **Optimization of Manpower for Assembly Line for Model A & B & Sub-Assemblies.**
- **Work distribution/ line balancing with man-machine chart**
- **Manpower calculation for a desired production level**
- **Manpower utilization & Capacity calculations**
- **Improvement & suggestions for making existing system better**

5. Overview

- **Study started with number of operations perform on each station of assembly line.**
- **Focus was on multi operator station for work distribution to reduce manpower.**
- **We did balance of assembly line by distributing equal work content on each station.**
- **In sub assembly line we analyze the count of sub assembly part required.**

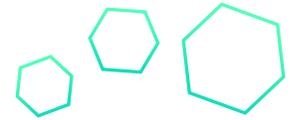


6. PMI Approach

- **At the time of kick of meeting, client cross functional team was formed.**
- **Understanding process, Video data collection & Elemental details preparation for observed activities using PMTS technique.**
- **Data requirement sent to area owners for logs of various activities.**
- **Validation for all elements & process is done by client.**
- **Analysis and work content calculation using PMTS technique & involving client for validation & confirmation. Bottleneck identification, Manpower & capacity calculations.**

7. Results and Conclusion

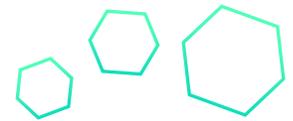
- **Preparation of elemental details from the videos recorded for the Assembly line of both models. Assembly line balancing w.r.t existing condition.**
- **Find out the bottleneck.**
- **Following is loom machine line balancing with Proposed 1 and Proposed 2 Condition.**



Descriptions	Man Power Reduction per shift			Proposed 1 As per existing 25 product per shift.		Proposed 2 With changing Tact for 29 Product per shift.	
	Existing	Proposed 1	Proposed 2	Man power Reduction	Productivity Improvement	Man power Reduction	Productivity Improvement
Manpower per shift (MODEL A)	26.00	21.00	24.00	19%	23.81%	20%	25.67%
Manpower per shift (MODEL B)	26.00	20.00	24.00	23%	30.00%	20%	25.67%
Production per shift	25.00	25.00	29.00				
Unit per Man (MODEL A)	0.96	1.19	1.21				
Unit per Man (MODEL B)	0.96	1.25	1.21				

Existing Analysis	Summary	Proposed 1	As per existing 25 product per shift. (Data shown for higher work content model MODEL A)	Proposed Analysis 1
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Sr. No.	Station Name	Existing Manpow	Propose Manpower 1	Manpower Saved	Existing utilisation	Proposed Utilisation	Action Plan
1	STATION 1	4	3	1	59%	95%	
2	STATION 2	3	2	1	73%	86%	
3	STATION 3	1	1	0	81%	81%	
4	STATION 4	1	1	0	84%	84%	
5	STATION 5	1	1	0	95%	82%	
6	STATION 6	1	1	0	65%	90%	
7	STATION 7	2	2	0	77%	100%	Sub assembly operator is consider on station only.
8	STATION 8	1	0	1	55%	0%	Transferred to REEDRING ASSEMBLY 01
9	STATION 9	1	4	1	84%	67%	
10	STATION 10	1			86%		Transfer to SEGMENT RING ASSEMBLY
11	STATION 11	1			75%		Transfer to DEFLECTING PULLEY ASSEMBLY 01
12	STATION 12	1			80%		Transfer to DEFLECTING PULLEY ASSEMBLY 01, Transfer to JOCKEY LEVER ASSEMBLY 2
13	STATION 13	1			52%		Transfer to COMPENSATOR RING ASSEMBLY 02
14	STATION 14	2	2	0	56%	86%	
15	STATION 15	2	2	0	56%	81%	
16	STATION 16	1	1	0	43%	0%	Transfer to E RING ASSEMBLY 01
17	STATION 17	2	1	1	30%	0%	Transfer to E RING ASSEMBLY 01
	Total	26	21	5	65%	82%	



Existing Analysis	Summary	Proposed 2	With changing Tact for 29 Product per shift. (Data shown for higher work content model)			Proposed Analysis 2
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Sr. No.	Station Name	Existing Manpow	Propose Manpower 2	Manpower Saved	Existing utilisation	Proposed Utilisation	Action Plan
1	STATION 1	4.00	3.00	1.00	59%	91%	
2	STATION 2	3.00	3.00	0.00	73%	85%	
3	STATION 3	1.00	1.00	0.00	81%	94%	
4	STATION 4	1.00	1.00	0.00	84%	98%	
5	STATION 5	1.00	1.00	0.00	95%	81%	
6	STATION 6	1.00	1.00	0.00	65%	75%	
7	STATION 7	2.00	2.00	0.00	77%	89%	
8	STATION 8	1.00	1.00	0.00	55%	63%	
9	STATION 9	1.00	1.00	0.00	84%	97%	
10	STATION 10	1.00	1.00	0.00	86%	100%	
11	STATION 11	1.00	1.00	0.00	75%	87%	
12	STATION 12	1.00	1.00	0.00	80%	92%	
13	STATION 13	1.00	1.00	0.00	52%	60%	
14	STATION 14	2.00	2.00	0.00	56%	75%	
15	STATION 15	2.00	2.00	0.00	56%	89%	
16	STATION 16	1.00	1.00	0.00	43%	0%	Transfer to E RING ASSEMBLY 01
17	STATION 17	2.00	1.00	1.00	30%	70%	
Total		26.00	24.00	2.00	65%	83%	

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