

Study Of Edible Oil Tin Making and Filling Line Industry

About the Client

- Client is a manufacturer & supplier Edible oil tin.
- Client's vision is to be the supplier with a large portfolio adapted for every need.

Aims/Objectives

- Work content measurement using time study on sample basis for Indirect area.
- Work distribution with optimum utilization of manpower.
- Identifying constraints in Value streamline

Key Points

- Study of assembly line for work standardization.
- Line balancing for 2.4 & 3.0 sec cycle time, Throughput 25 & 20 Tins / min respectively.
- Dynamic summary for Production planning of multiple making & filling line with varying demand.

Client's Challenge

- Work Content Estimation on installed capacity.
- Work distribution with optimum utilization of manpower.
- Identifying constraints in Value streamline.

PMI's Approach

- Identification of Project scope.
- Data collection & Video Shooting of various Processes.
- Preparation of Process Flow & Schematic Layout.
- Elemental detail preparation using PMTS technique (MODAPTS®)
- Work content estimation & Analysis.
- Manpower calculation.
- Work distribution with Man machine chart.
- Improvements & Suggestions (Waste removal, Layout, LCA).
- Dashboard based on fluctuation in demand

Data Collection-

- Identification of Project scope.
- Data collection & Video Shooting of various Processes
- Collect older Process Flow & Schematic Layout.
- Production data and shift time available data from client

Data Analysis -

- Improvements & Suggestions (Waste removal, Layout, LCA).
- Dashboard based on fluctuation in demand
- Interaction with client to understand documents and processes

Description	Existing	Proposed
Total working Time (Min.)	480	480
Total Available time (Min.) (- Lunch & Setting)	420	420
Total working time (Sec.)	25200	25200
Output Rate (Tin/Min)	25	25
Bottleneck of line (sec/Tin)	2.40	2.40
Installed Capacity of Jar (No. of Tin)	10500	10500
Manpower (Nos.)	17	13
Manpower Utilisation	23%	35%

Results & Conclusion

- Optimum work distribution with enhancement in Manpower Utilisation.
- Dashboard for production planning, resource calculation of multiple line considering varying demand.

Operation Name	Suboperation Name	WC (Sec.)	Frequency	Div. Freq.	CT (Sec.)	Total manual WC	Existing Manpower Worker (W)	Cycle Time	Manpower utilization	Slack Available	Proposed Manpower Worker (W)	Cycle Time after Analysis	Manpower utilization	Slack Available				
TIN MAKING LINE																		
1. L1 BOTTOM SEAMER MACHINE (W - 1) (M2U04773)																		
	1. FEEDING BOTTOM PLATE TO MACHINE (M2U04773)	1.16	1.00	3.00	0.39													
	2. REMOVE TIN BOX FROM CONVEYOR(Q=4 TIN BOX) (M2U04)	6.06	42.00	10500.00	0.02	0.43	1	0.43	18%	1.97	1	0.43	36%	1.				
	3. ADDING TIN BOX ON CONVEYOR	3.74	42.00	10500.00	0.01													
2. L1 AIR TESTING MACHINE (W - 1) (M2U04774)																		
	1. TRANSFER OF LEAKAGE TIN BOX	22.06	79.00	10500.00	0.17													
	2. STRIPING TIN BUNDLE (1 BUNDLE = 8 TIN BOXES) (W-1)	9.42	39.38	10500.00	0.04													
	3. REMOVE TIN BOX FROM CONVEYOR(Q=4 TIN BOX) (M2U04)	6.06	42.00	10500.00	0.02	0.24	1	0.24	10%	2.16	1	0.24	10%	2.				
	4. ADDING TIN BOX ON CONVEYOR	3.74	42.00	10500.00	0.01													
Operation Name	Suboperation Name	WC (Sec.)	Frequency	Div. Freq.	CT (Sec.)	Online Manual WC	Machine Auto	Total manual WC	Existing Manpower Operator (OP)	Worker (W)	Cycle Time	Manpower utilization	Slack Available	Proposed manpower Operator (OP)	Worker (W)	Cycle Time after Analysis	Manpower utilization	Slack Available
TIN FILLING LINE																		
1. OUTPUT CONVEYOR MAINTAIN ACTIVITY (4W)																		
	1. STUCK AREA TO LINE (3 TINS AT A TIME)	9.68	1.00	3.00	3.23	3.23		6.41		4	1.60	53%	5.59		3	2.14	71%	
	2. LINE TO STUCK AREA	9.55	1.00	3.00	3.18	3.18												
2. LABEL MACHINE OPERATOR (S1990016) (1OP, 1W)																		
	1. NC - ROLL CHANGE ACTIVITY	16.51	8.00	8400.00	0.016	0.016		0.016	1									
	2. LABEL CHECKING ACTIVITY (1W) (1 Same in 4)	2.45	1.00	4.00	0.61	0.61		0.61		1	0.31	10%	5.37	1		0.63	21%	
3. FILLING MACHINE (1 OP) (S1990016)																		
	1. TIN FILLING MACHINE SETTING & OBSERVATI	39.96	1.00	24.00	1.665	1.665		1.665	1		1.67	56%	1.335	1		1.67	56%	
	2. TIN FILLING (MACHINE AUTO)	20.00	1.00	6.00	3.33		3.33											

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