Automobile Component Manufacturer Industry: A Case Study

About the Client

- Client is a manufacturer & supplier of high-quality Automobile Components.
- With 19 years of rich experience in the automotive industry, the organization today is a world class manufacturer of Chassis for Motorcycles, Welded Sub-Assemblies, etc

Aims/Objectives

- Work content measurement using PMTS technique of their identified areas.
- Work distribution/ line balancing with man-machine chart.
- Eliminating waste and nonvalue-added activities.
- Suggestion for low-cost automations
- Improving the effective utilization or optimization of resources.
- Improvement & suggestions for making existing system better.
- Manpower utilization & Capacity calculations.

Client's Challenge

- Work Standardisation using PMTS techniques.
- Dashboards for production planning as per demand.
- VA/NVA analysis on current working conditions
- Identify true potential capacity of plant.
- Low manpower utilization.
- Layout Modification

PMI's Approach

The study was organized in a 3-stage process:

1. Data Collection - Video shooting of all activities on the line.
2. Estimation & Data Analysis – Basic MOST estimation, work distribution, dashboard preparation, VA/NVA analysis.
3. Results and Conclusion – Area wise Dashboards for Planned production, fatigue reduction, improved productivity, improved manpower utilization, identification of NVA work content.

Involvement of Associates –

- PMI – 1 Project Manager, 2 Engineers.
- Client – 2 Project Co-ordinators.

Data Collection-

- Plant Round with CFT to understand the scope of work.

- Recording videos of activities carried in various areas.

- Interaction with client to understand process from videos.

Data Analysis -

- Preparation of elemental details using PMTS technique & validation by client.

- Analysis (Work distribution/VA-NVA identification) for manpower calculation, optimum manpower utilization & identifying capacity.

- Dashboard preparation for production planning as per demand.

Shift Hours	8.5	
Total Available Time	510	in mins
Total Working Time	440	in mins

Propoosed 1 Results (As per existing system)	
Manpower Reduction	39.3%
Productivity Improvement	64.8%

Proposed 1 Results (As per existing system)	
Manpower Required for Line/Day	17
Manpower Required for Offline Activities	4

Change the demand w.r.t available time and priority demand

Sr.No	Component	Existing Summary				Proposed 1 Summary (As per existing system)					Work Content (Production/shift time required)	Maximum Time available w.r.t Production	TAKT	Maximum Production/shift
		Manpower Per Shift on Line	Manpower Per shift for offline Activity	Production per Shift	Unit Per Man	Manpower Per Shift on Line	Manpower Per shift for offline Activity	Production per	Unit Per Man	Production per /shift				
1	TATA Fuel Tank	11.00	4.00	806.00	1.133333333	0.00	0.00	550.00	0.000	0.00	0.00		48.00	550.00
2	Fuel Tank (Rajkot)	16.00	6.00	550.00	25	0	0	550.00	0.000	0.00	0.00		48.00	550.00
3	Fuel Tank - Mohali	18.00	19.00	550.00	14.86486486	0	0	550.00	0.000	0.00	0.00		48.00	550.00
4	Floor Assy L/R	11.00		254.00	23.09090909	7		352.00	50.286	100.00	7479.40	26400	74.79	352.00
5	All Air Reservior BS-VI	19.00	4.00	1100.00	47.82608696	17	4	1100.00	52.381	600.00	14400.00		24.00	1100.00
6	All Air Reservior BS-IV	18.00	9.00	1087.00	40.25925926	0	0	1100.00	0.000	0.00	0.00		24.00	1100.00
6.1	Venus (Power Coating)(Jo	13.00				12								
7	Cylinder Cover / PP/ NPP	13.00		1375.00	105.7692308	0.00	0	1375.00	0.000	0.00	0.00		19.20	1375.00
		19.00	19.00			17.00	4.00				21879.40	26400	7.33	

Cell will trigger red when work content as per demand will be

Area wise Dynamic dashboards for resource calculation

- Improvement & suggestions for making existing system better.
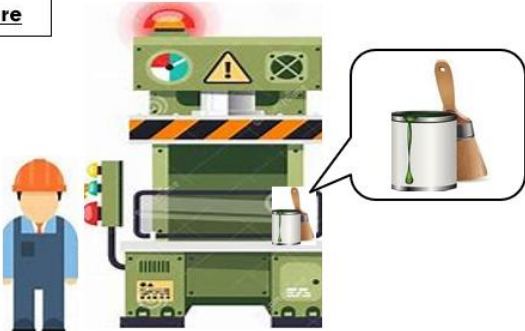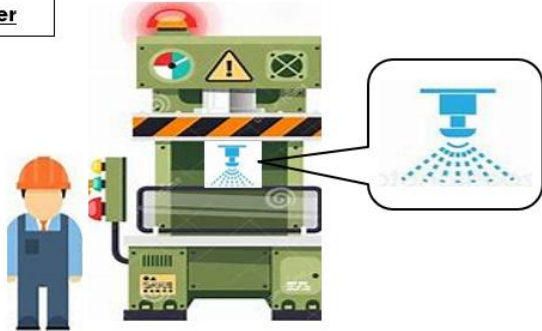
Results & Conclusion

After doing analysis and evaluation following results were obtained –

1. Improved productivity by 22%.

2. Fatigue reduction by rotation of operators in between lines & by introducing low-cost automation.

3. Dashboards for future planning as per demand.

	Sr.No	Department	Component	Existing Manpower	Proposed Manpower (PMI) + Satyam CFT	Reduction in Manpower	Net Reduction (Current Condition)	Net Reduction with Potential Improvements	Net Total Reduction (Current + Improvements)
Per Day	1	Press Shop		78	74	2	4	6	10
				7	5	2			
Per Shift	2	Paint Shop		51	47	4	4	0	4
Per Shift	3	Weld Shop	1.Fuel Tank Rajkot 2.Fuel Tank Sonalika	10	7	3	12	8	20
Per Shift			3.Fender Sikandar	28	24	8			
Per Shift			4. Godrej (Regular)	10	9	1			
Per Shift	4	Machine Shop	Push Rod (7324)	9	8	1	1	0	1
				193	174	Total Manpower Reduction	21	14.00	35
						Manpower Reduction %	10%	8%	18%
						Productivity Improvement	11%	9%	22%

Overall Manpower Summary

4. Kaizen Suggestion for further improvement.

Before

Reasons problem chosen-
- Movement of employees from their workplace to other meeting room.
- Decision making is slow, Waiting .
- Productivity is low.

After

Tools used for solutions -
- Physical meetings can be converted into virtual meeting provided physical intervention not required .

Results-
- Unnecessary movement of associate will be reduced .
- Less waste – Motion , Waiting .
- Improved productivity as decision making is fast .

Before

Reasons problem chosen-
- Operator need to manually oil the Tool and part by brush.
- Unsafe to put the hand under the press for oiling.
- Unnecessary work content.

After

Problem solution -
- Installing automated oil spraying gun to eliminate manual oiling.

Results-
- Unnecessary work content will be reduced .
- Safety for operator as he will not have to put the hand under the press.

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