Indriect Area study in Tyre Manufacturer Industry.

About the Client

- Client is a manufacturer & supplier Automobile 2 and 3-wheeler Tyres.
- Client's vision is to be the global leader with a vision to make mobility, safer and smarter.

Aims/Objectives

- Work content measurement using time study on sample basis for Indirect area.
- Work Distribution for manpower utilization.
- Resource calculations i.e., manpower as well as machines.
- Lean wastes analysis.

Key Points

- Productivity improvement by 60%.
- Workforce reduction by 37%.
- Increased workforce utilization to 84.2% from 66.6%.

Client's Challenge

- Standardization of work content based historical data and client site data.
- Muda & Muri analysis for further improvement.
- Identify true Manpower requirement of plant.

PMI's Approach

The study was organized in a 3-stage process:

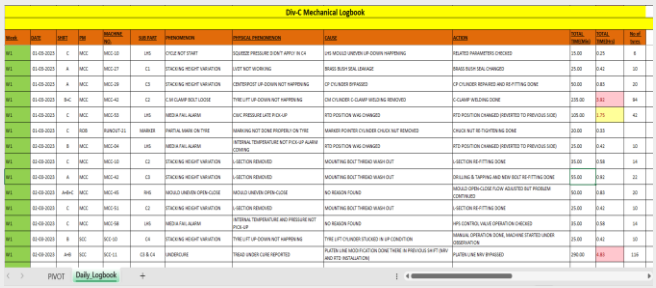
1. Data Collection –
    a. Plant round to understand the scope of work.
    b. Interaction with respective area owners/executives to understand the various activities carried out in the area.
    c. Data requirement sent to area owners for logs of various activities.
2. Estimation & Data Analysis – Time/stopwatch study done on sample basis for some activities, work distribution, Resource Calculation, Lean waste analysis.
3. Results and Conclusion –Improved productivity, improved manpower utilization, identification of NVA work content.

Involvement of Associates –

- PMI – 1 Project Manager, 2 Engineers.
- Client – 1 Project Co-ordinators, Area Managers of various areas and some Associates.

Data Collection-

- Plant round to understand the scope of work.
- Interaction with respective area owners/executives to understand the various activities carried out in the area.
- Data requirement sent to area owners for logs of various activities.
- Receiving Logs of Breakdowns, Preventive Maintenance activities and other activities such as Daily activities, Tests carried out in QA labs for last 6 months, also some other activities such as Time and Condition based Monitoring list from client.
- Interaction with client to understand documents and processes.



Breakdown Logs

Data Analysis -

- Preparation of activities work content by time study and validation by client.
- Analysis (Work distribution/VA-NVA identification) for manpower calculation, optimum manpower utilization.
- Improvement & suggestions for reducing Lean wastes and making existing system better.

					Daily Work Content (in mins)			NVA- Non Value Added Activities			
Sr no	Activity	Sub-Activity	Category	Existing WC (in mins)	Daily WC (in mins) (Existing)	Existing WC (in mins) (After validation)	Daily WC (in mins) (NVA Removal)	Waiting	Tool	Talking	Remarks
1	Curing First tyre check		Curing FTC	45	1080.00	1080.00	720.00	360.00	0	0	1. Approval time - 15 mins waiting. (Manager, Mould shop engineering, Process Associate) 2. (8-10/shift)
2	Pending FTC		Curing FTC	30	720.00	720.00	600.00	120.00	0	0	1. Movement time -5 min 2. (8-10/SHIFT)
3	Curing last tyre check		Curing LTC	30	720.00	720.00	600.00	120.00	0	0	1. Need 6 month log (8-10/SHIFT)
3	Mould grading for ICE blasting		Grading	15	300.00	300.00	300.00	0.00	0	0	1. 20-25 logs/day
4	Curing mould inspection	1. Going from CFT to MCC 81 press	Inspection	3	4.68	4.68	4.68	0.00	0	0	1. 60 -70 curing mould inspection
4	Curing mould inspection	2. Checking tyre and check sheet filling for 1 cavity	Inspection	10	15.60	15.60	15.60	0.00	0	0	1. 60 -70 curing mould inspection
4	Curing mould inspection	3. Abnormality identification, communication & correction	Inspection	10	7.96	7.96	7.96	0.00	0	0	1. 60 -70 curing mould inspection
5	Curing process audit	1. Going from CFT to curing press	Process Audits	2	9.42	9.42	9.42	0.00	0	0	
5	Curing process audit	2. Parameter check in HMI, PCI, and each cavity	Process Audits	30	141.30	141.30	94.20	47.10	0	0	1. 10 mins waiting time due to cycle (communication with coordinator can solve the problem
5	Curing process audit	3. Abnormality identification, communication & correction	Process Audits	15	35.33	35.33	35.33	0.00	0	0	
6	TBM Route card	1. Going from CFT to building machine	Documentation	2	16.00	16.00	16.00	0.00	0	0	1. 8-10 frq per day (Only OEM no Replacement)
6	TBM Route card	2. Parameters checks regarding drum, material centering and m/c temp	Documentation	23	184.00	184.00	144.00	40.00	0	0	1. 8-10 frq per day (Only OEM no Replacement) 2. 5 MINS (nva_WAITING)

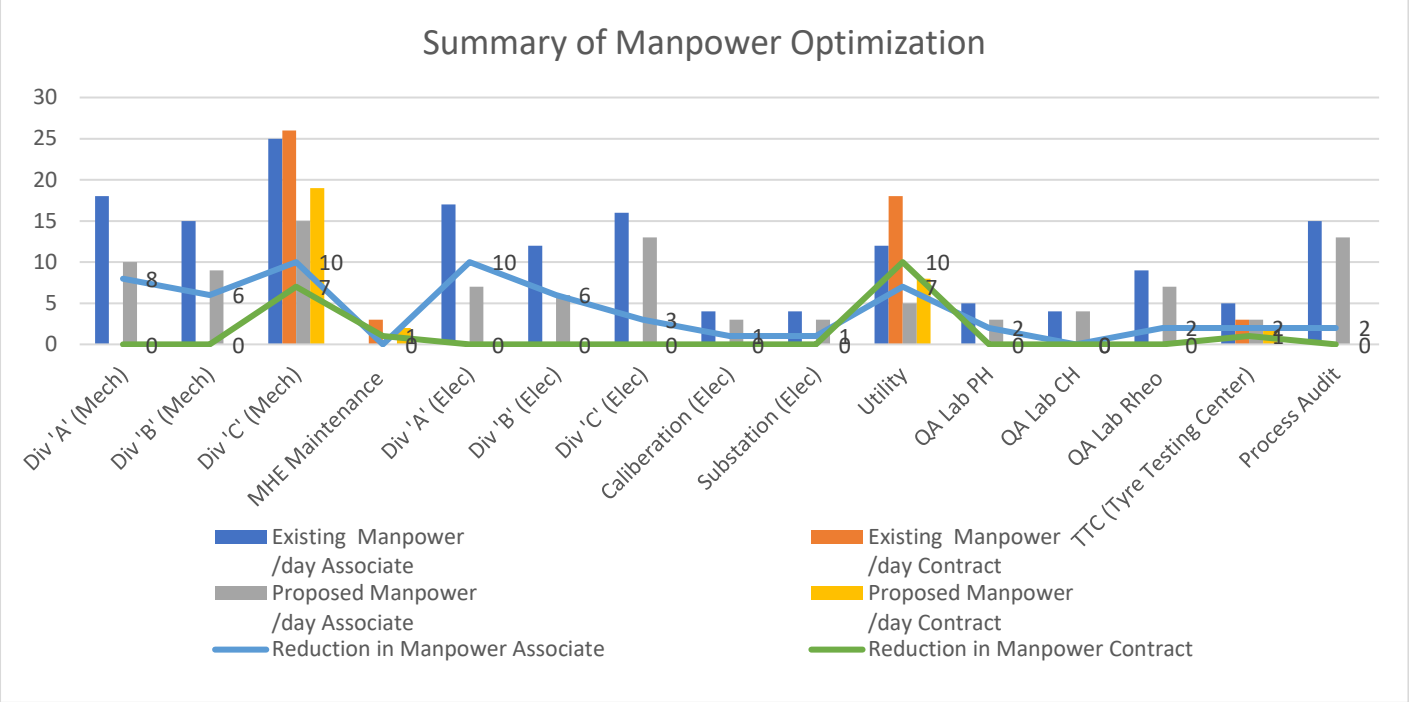
Sample Analysis of Process Audit area

Results & Conclusion

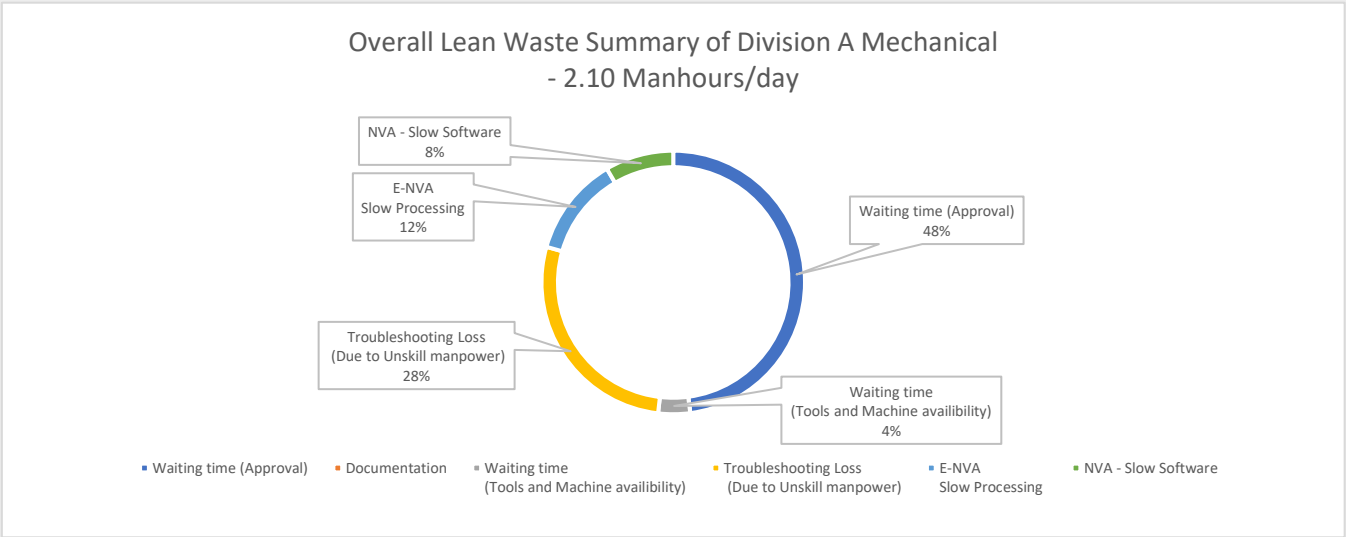
After doing analysis and evaluation following results were obtained –

1. Improved productivity by 60%.

2. Manpower utilization rose from average of 66.6% to an average of 84.2%.



3. Lean waste analysis for future improvement.



4. Improvements and Suggestions

Before

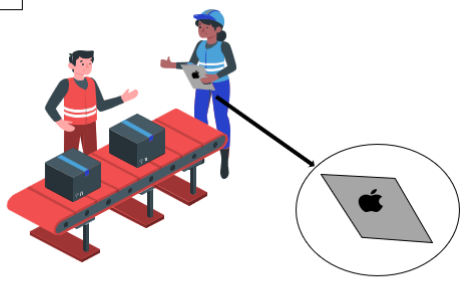
Reasons problem chosen-

- Manually filling of logbook for tests/activities carried out.
- Activity is Time Consuming.

Tools used for solutions -

- Interaction data ,Time Study.
- Digital Media.

After



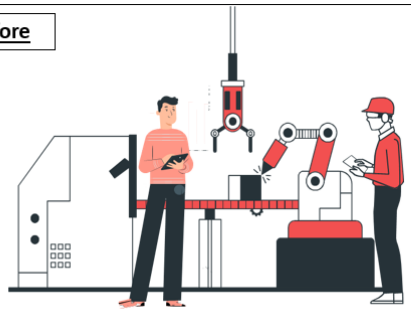
Results-

- Filling of logbook for tests/activities carried out with help of a Tablet.
- Unnecessary time for filling logbook will be reduced.

Next Steps -

- Tablet should be provided for filling the logs.

Before



After

Reasons problem chosen-

- Movement of associate in facility for any approvals for activities that involve safety hazards.
- No means of communication media with worker.

Tools used for solutions -

- Interaction data ,Time Study.
- Deck Phone (Communication Device)/ Tablet.

Results-

- Approvals for safety by help of Deck phone or Tablet for ease of the operator.
- Unnecessary time for movement in facility will be reduced .

Next Steps -

- Tablets to be made available for approvals wherever required by the operator.

Before

Using digital media to increase the productivity.

After

Using tablet to check equipment status and verification of equipment.

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