

Research Article

# To study and analyze a production line of steering

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## Abstract

Project has been completed in the practical environment of an auto ancillary company. There is always a room for improvement in any process; the approach for study and further improvement of process is used for the fulfilment of this project. Main purpose of this project is to scrutinize every aspect of a frame line. Main focus is to study its cycle time and various wastes which can be removed from the process in order to optimize the process. Line balancing concept is used for balancing the line to get single piece flow.

**Keywords:** Line balancing, cycle time, Process study

## Introduction

**Line Balancing:** Line adjusting is a powerful apparatus to enhance the throughput of mechanical production system, which helps in lessening non-esteem included exercises and process duration. Line Balancing is the issue of doling out activity to workstation along a mechanical production system, such that task is ideal in some sense

*Methodology adopted for line balancing*

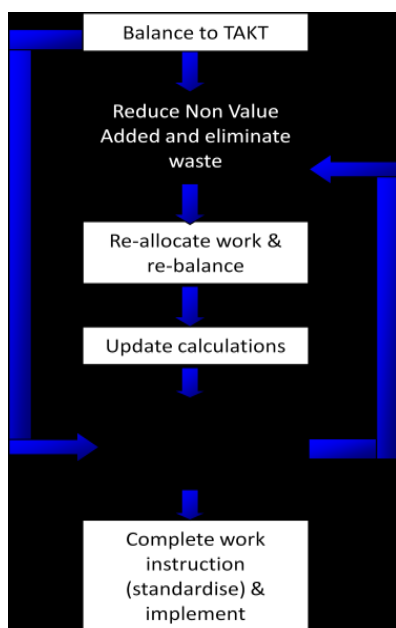


Figure Flow chart for line balancing

## Calculation

*Cycle time*

Cycle time = available time / desired output

Assigning work to workstation:

No. of workstation = sum of task time / desired actual time.

## About the project

Project has been completed in the practical environment of an auto ancillary company. There is always a room for improvement in any process; the approach for study and further improvement of process is used for the fulfilment of this project. Main purpose of this project is to scrutinize every aspect of a frame line. Main focus is to study its cycle time and various wastes which can be removed from the process in order to optimize the process.

## Action plan for the fulfilment of project

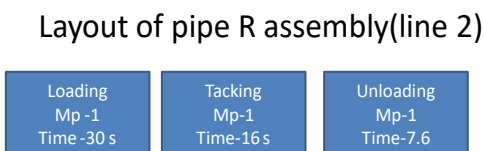
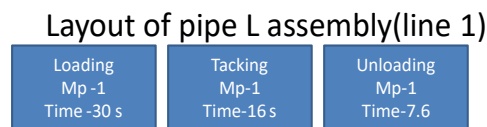
Table 1

S. No.	Activities	January	February	March	April	Status
1	Part study and process study	█	█			completed
2	Cycle time study of pipe R and pipe L subassembly		█			completed
3	Cycle time study of main frame line and to find some more improvements		█	█		completed
4	5 S implementation			█		completed
5	Dissertation work			█	█	completed

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**Placing of layout**

*Earlier process layout:* In the earlier process layout batch production is used for manufacturing the product. Figures below show earlier process layout.



**Final welding( on single booth)**

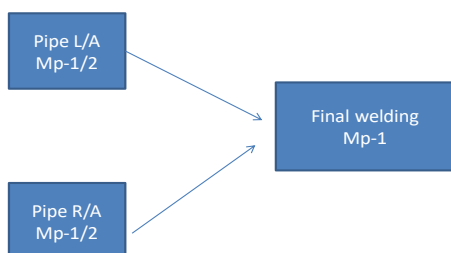


Figure Earlier process layout of pipe R and L subassembly

**Placing of cycle time table**

*Cycle time study*

Same approach as for pipe R and Pipe L is followed for the line balancing of the main frame, starting from the cycle time study of main frame assembly.

**Table 2** Cycle time of main frame

Main Frame					
Time in seconds					
Sr. No.	Tacking 1	Complete Weld 1	Complete Weld 2+Gusset	Chipping	Tapping
1	45.18	51.21	46.3	22.86	20.20
2	39.3	47.05	47.3	20.58	20.45
3	42.45	54.35	45.2	25.10	19.20
Average	42	51	46.26	22.84	19.95

**Placing of table after implementation**

**Table 3**

Main Frame				
Sr. No.	Tacking 1	Complete Weld 1	Complete Weld 2+Gusset	Chipping+ Tapping
1	49.18	47.21	46.92	45.06
2	43.3	43.05	47.3	45.03
3	46.45	50.35	45.2	47.05
Average	46.31	46.87	46.26	45.71

**Conclusion**

Nothing is impeccable there is dependably an extension for changes. Same with assembling forms, there is dependably a degree for upgrades.

The ideas like line adjusting, process duration think about utilized here have all inclusive approach, as they have their application on one generation line as well as on each creation line.

Line adjusting idea is utilized on two generation line here, on both of the line it demonstrated great outcomes.

On one line it spared about 1/3 rd of the creation time if this efficient is changed over into cash, it factes a loads of sparing as it can spare one move work. Prior the work which is done in 3 movements can be effectively done in 2 shifts.

**References**

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