

Project Report on Maynard Operation Sequence Technique

Ankur, Mr. Manish

Dronacharya College of Engineering, Gurugram, Haryana, India

ABSTRACT

I did my 6 weeks industrial training at Maruti Suzuki India Ltd, Gurugram in the Assembly 1 Department under Production Division.

The entire duration I was in the Assembly-1 department. The first Week in the dept. office itself for M.O.S.T. study & techniques, then for the major part of June in Knuckle Sub Assembly Area & subsequent 4 Weeks on Line-4 & office of the department.

Overall my project has been related to the standardization of man power for fluctuating production volumes of IGNIS (YJC) model & improvement in HPV. Majority of the time has been engaged in videography & subsequent M.O.S.T. analysis of the work stations.

I have finished two projects in my tenure. Man Power Reduction was the basic principle underlying the M.O.S.T. project done.



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INTRODUCTION

MARUTI SUZUKI INDIA LIMITED - COMPANY PROFILE :

Maruti Suzuki India Limited (MSIL, formerly Maruti Udyog Limited), a subsidiary of Suzuki Motor Corporation of Japan, is India's largest passenger car company, accounting for over 54% of the domestic car market. They offer a full range of cars from entry level Maruti 800 & Alto to stylish hatchbacks like A-star, Swift, Wagon-R, Estilo and sedans like DZire, SX4 and the Sports Utility vehicle Grand Vitara. Since its inception, MSIL has produced and sold over 7.5 million vehicles in India and exported over 500,000 units to Europe and other countries. The turnover for the year 2007-08 stood at Rs.79762 Crores, Yen 449 Billion, \$4.512 Billion and Profit after Tax at Rs. 17308 Million.

Date of Incorporation

➤ February 1981

Incorporated as Maruti Udyog Limited

➤ October 1982

As a Joint Venture between the Indian Government and Suzuki Motor company, JAPAN

Type of Industry:

➤ Automotive: The company designs and manufactures motor cars.

Key Representative:

➤ Mr. Kenichi Ayukawa, Managing Director and CEO

Revenue:

➤ Rs.77,326 million ; US\$ 5.5 billion (2017)

Employees:

➤ 40000 employees

COMPANY SHARES

1. PROMOTERS 56.21%
2. FI/BANKS/INSURANCE 5.72%
3. MUTUAL FUNDS/UTI 5.66 %
4. NON- INSTITUTIONS 7.15%

LIST OF TERMS

1. HPV: Man hours per vehicle

HPV= $\frac{\text{Workforce} \times \text{Number of hours per shift}}{\text{Number of vehicles produced}}$

2. Work Content

Operator time = $\sum (\text{Online} + \text{Offline} + \text{Move})$

3. Cycle Time

Operation Time = $\sum (\text{Online} + \text{Auto Cycle})$

4. Online

Time of manual activities done by Operator when machine is not running

=Longest/Critical Path time of the activities done in parallel

5. Offline

=Time of manual activities done by Operator when machine in running

= $\sum (\text{Time of the activities done in parallel})$

6. Move

=Walking time of operator from Work Center to Next Work Center in Multi Machine /stage Working

7. Auto Cycle

= Auto Cycle /Process time or machine controlled time

8. Through Put Time

= $\sum (\text{Cycle time of all operations on Critical Path for the Product})$

9. Effective Working Time

=Content of Work in Minutes for Individual Operator in a Day.

=Average Content of Work in Minutes for a Group or Cell

Content of Work for Group (Mins)

= -----

No. of Operators

LIST OF PARAMETER

A. Action Distance

This parameter is used to analyze all spatial movements or actions of the fingers, hands and/or feet, either loaded or unloaded (loaded means carrying an object, unloaded means the hands are free).

B. Body Motion

This parameter is used to analyze either vertical motions of the body or the actions necessary to overcome an obstruction or impairment to body movement.

C. Gain Control

This parameter is used to analyze all manual motions (mainly finger, hand and foot) employed to obtain complete manual control of an object and release the object after placement.

D. Placement

This parameter is used to analyze actions at the final stage of, in object's displacement to align, orient and/or engage the object with another object before control of the object is relinquished.

E. Move Controlled

This parameter is used to analyze all manually guided movements or actions of an Object over a controlled path.

F. Process Time

This parameter is used to account for the time for work controlled by electronic or mechanical devices or machines, not by manual actions.

G. Alignment

This parameter is used to analyze manual actions following the Move Controlled or at the conclusion of Process Time to achieve the alignment of objects

H. Fasten

This parameter is used to establish the time for manually or mechanically assembling one object to another, using the fingers, hand or a hand tool.

I. Loosen

This parameter is used to establish the time for manually or mechanically disassembling one object from another using the fingers, hand or a hand tool.

J. Cut

This parameter covers the manual actions employed to separate, divide or remove part of an object using a sharp-edged hand tool such as pliers, scissors or a knife.

K. Surface Treat

This parameter covers the activities aimed at removing unwanted material or particles from, or applying a substance, coating or finish to, the surface of an object.

L. Measure

This parameter includes the actions employed in determining a certain physical characteristic of an object by using a standard measuring device.

M. Record

This parameter covers the manual actions performed with a pencil, pen, marker, chalk or other marking tool for the purpose of recording information.

N. Think

This parameter refers to the eye actions and mental activity employed to obtain, information (read) or to inspect an object, including reaching to touch, when necessary, to feel the object.

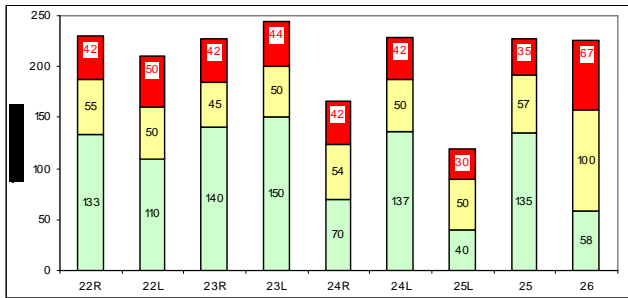
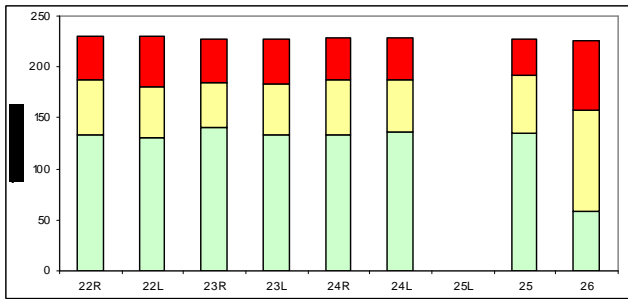
WHAT IS PRODUCTIVITY IMPROVEMENT

Productivity Improvement implies optimum utilization of resources to get maximum output.

Parameters Affecting Productivity

1. Line Efficiency= $\frac{\text{Effective Working Time} - \text{Stoppage}}{\text{Effective Working Time}}$
2. Line Balancing Efficiency: $\frac{\sum (\text{Cycle time of each station})}{(\text{No. of stations} \times T_{\max})}$

A Balanced line is one in which the time wasted at each station is almost constant.



As can be seen from the graph of the imbalanced line, operators at 24R and 25L will be idle for a long time as they have less work load. Instead, the line may be balanced so that every operator has almost equal work load. This will not only reduce idle time but will also reduce manpower as the work from a particular station can be distributed to other station taking care of precedence of tasks. This will lead to a situation as shown in the first graph. The line is balanced and one station has been reduced.

Balancing the line, however, is not an easy task as every operation may have a predecessor, thereby meaning that this operation cannot take place until the previous one has been completed. For example, the parking cable must be fitted before the fuel tank is mounted on to the vehicle.

TECHNIQUE STUDY, LEARNING, IMPLEMENTATION & ANALYSIS

AIM OF PROJECT

- STANDARDIZATION OF MAN POWER FOR FLUCTUATING PRODUCTION VOLUMES
- TO IMPROVE PRODUCTIVITY (HPV)

TOOLS USED

“M.O.S.T”
(MAYNARD’S OPERATION SEQUENCE TECHNIQUE)

WHY MOST

What is **M.O.S.T** and **How is it different from Time study?**

- M.O.S.T is an advanced work measurement system which has evolved from time study.

In **M.O.S.T**,

- An operation is divided into a sequence of basic motions, which
- are not operation specific
- Time is assigned to these motions
- Summation of the time gives total time required for the operation
- Time Study finds the time for completing a operation or a set of operations using a stop watch

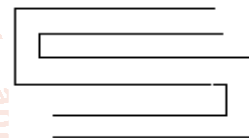
Advantages

- Quantifies time lost in waste motions.
- Eliminates the inaccuracies of Time Study.

How M.O.S.T data is used?

- Standard times calculated are used for Line balancing using Process Designer Software.
- Actual time taken and a Target time obtained from MOST can be displayed at each station for focused implementation of MPS activities.
- Benchmarking of operations possible across Models, Lines & Plants.

LAYOUT OF LINE 4(ASSEMBLY SHOP 1)



LINE 4

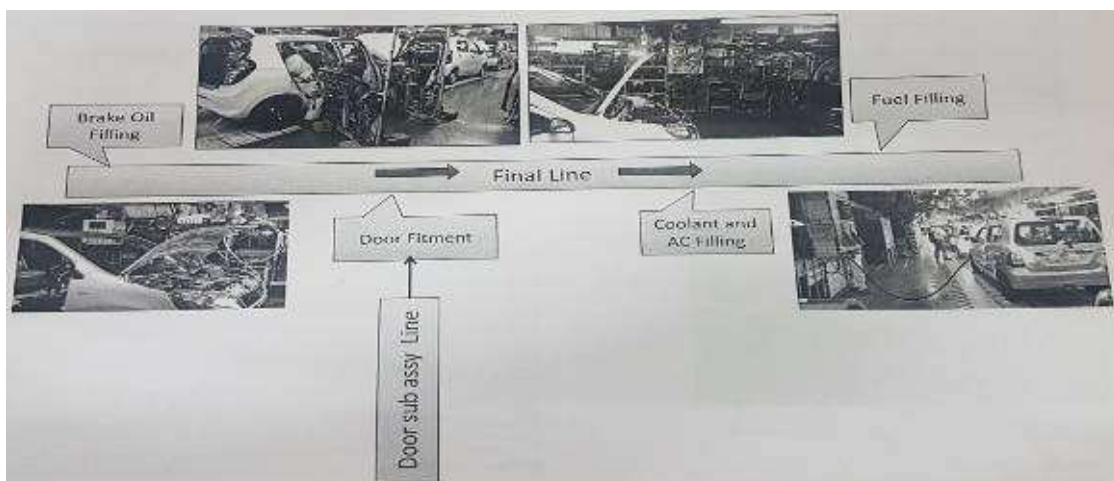
AREA ASSIGNED: CHASSIS LINE (YJC)

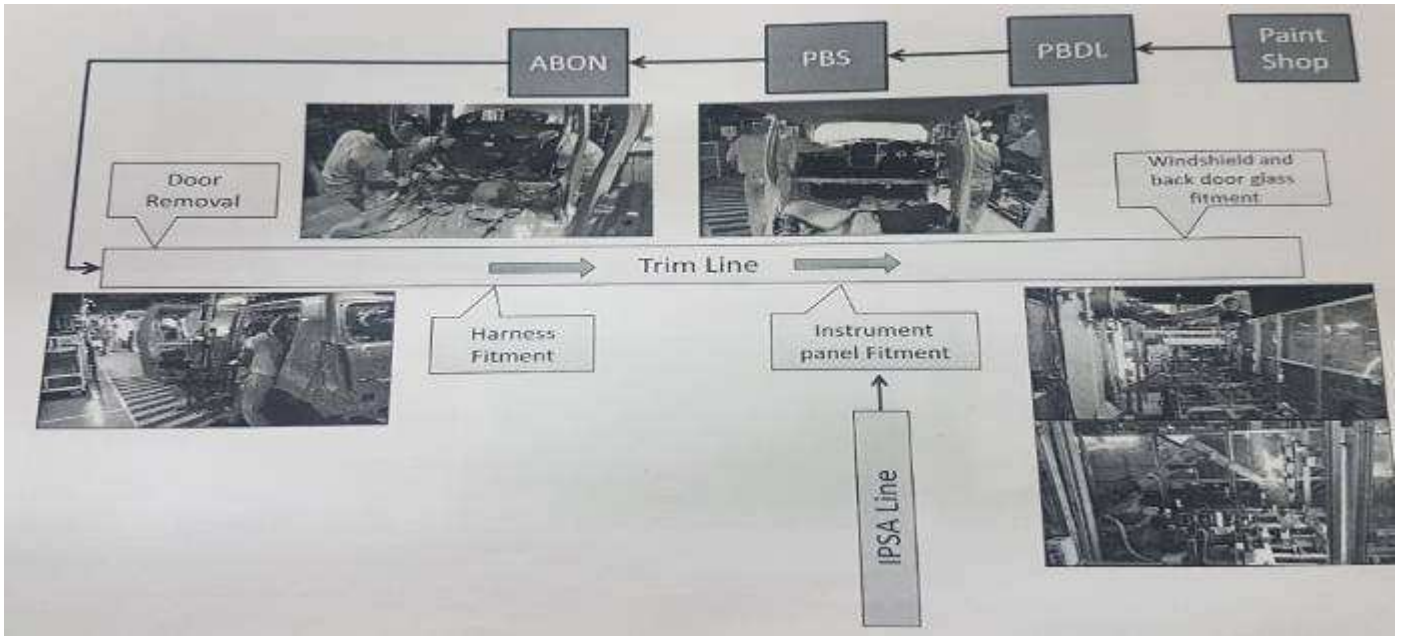
FINAL	CHASSIS	TRIM
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TRIM: It is the area where mainly plastic components and light components are fitted.

CHASSIS: It is the underbody region. Components such as engine, axle .etc. which have to be fitted under the floor are mounted.

FINAL: It is the area where components essential for the customer are fitted.





PROCEDURE FOLLOWED

- First made variant sheet for each work station than done videography. After watching the videos, MOST sheets were prepared, which calculated the standard time that should be taken by and operator to complete that particular task. The actual time taken by the operator as per the video was also noted down

MOST PROGRESS REPORT (12-06-2018 TO 16-06-2018)								
L-4 CHASSIS LINE								
S.NO.	ST. NO	VARIANT	YJC			STATUS	TOTAL SHEETS	COMP. SHEETS
			5 STR AC	5 STR NON-AC	7 STR NON-AC			
1	18L1	Brake Pipe Clamping	▲	▲	▲		1	1
2	18L2	Brake Pipe Clamping & Speed Nut Fitment	▲	▲	▲		1	1
3	19L1	Axle SA Lt.	▲	▲	▲		1	1
4	19L2	Rear Axle Mtg. Lt	▲	▲	▲		1	1
5	19R1	Axle SA Rt.	▲	▲	▲		1	1
6	19R2	Rear Axle Mtg. Rt	▲	▲	▲		1	1
7	19	Rear Axle Loading	▲	▲	▲		1	1
8	20R1	Water Pipe S/A	▲	▲	▲		1	1
9	21L1	Harness Wire Clamping	▲	▲	▲		1	1
10	21L2	Strut Mtg.	▲	▲	▲		1	1
11	21R1	Rear Bumper & Mud Flap Mtg.	▲	▲	▲		1	1
12	21R	Strut Mtg.	▲	▲	▲		1	1
13	23L1	Tender Lining	▲	▲	▲		1	1
14	23L2	Fuel Pipe & Toe Hood Mtg.	▲	▲	▲		1	1
15	23L	Front Susp. Mtg.	▲	▲	▲		1	1
16	23R1	Side S/A - Bracket S/A	▲	▲	▲		1	1
17	23R2	Side S/A - Front Suspension	▲	▲	▲		1	1
18	23R3	Mud Flap Mtg.	▲	▲	▲		1	1
19	23R	Ft. Susp. Mtg.	▲	▲	▲		1	1
20	25R	Fuel Tank Mtg.	▲	▲	▲		1	1
21	26L	Harness Wire Clamping	▲	▲	▲		1	1
22	26R	Fuel Tank Mtg.	▲	▲	▲		1	1
23	27L	Bracket Mtg.	▲	▲	▲		1	1
24	28L	Water Pipe, Fuel Pipe Clamping	▲	▲	▲		1	1
25	28R	Harness Wiring & Heat Protector Fiting	▲	▲	▲		1	1
26	29L	Engine Mtg.	▲	▲	▲		1	1
27	29R	Gromet & Seal Hose Fitting	▲	▲	▲		1	1
28	30L	Engine Mtg.	▲	▲	▲		1	1
29	30R	Drive Shaft Fitting	▲	▲	▲		1	1
30	31L	Muffler & Silencer Shaft Fitment	▲	▲	▲		1	1
31	32L	Pan Guard Mtg	▲	▲	▲		1	1
32	32R	Clutch Clamp & Clutch Cap Mtg.	▲	▲	▲		1	1
33	33L	Front Light & Grill Mtg.	▲	▲	▲		1	1
34	33M	Marking & Ins.	▲	▲	▲		1	1
35	33R	Steering Joint	▲	▲	▲		1	1
36	34L	Ventilator Mtg. & Carpet Adjustment	▲	▲	▲		1	1
37	34R	Ventilator Mtg. & Carpet Adjustment	▲	▲	▲		1	1
38								
39								
TOTAL SHEETS							37	37

IGNIS (YJC) CHASSIS LINE (LINE 4) PROCESS SHEET

PROCESS SHEET																	Date:	12-Oct-16								
Model : YJC																	STN : FRAME S/A-2									
S.NO	PART NO.	PART NAME	AREA	5M1LX	5M1VA	5M1VA	5M1ZK	5M1ZK	5M1ZK+	5M1ZK+	5M1VQ	5M1VQ	5M1ZD	5M1ZD	5M1ZD+	5M1ZD+	Y1C/A P06	Y1C/A P12	Y1C/A P06	Y1C/A P12	Z01AV1F P06	Z01AV1F P12	Z01AV1F P12	PROCESS		
1	45810M66R00	FRAME COMP, FRONT SUSPENSION	CHASSIS2	1	1	1	1	1	1	1							1	1	1	1	1	1	1	1	PULLED UP BY THE UTTER TO THE TABLE	
2	42311M66R00	BAR, FRONT STABILIZER	CHASSIS2	2	2	2	2	2	2	2							2	2	2	2	2	2	2	2	FITTED BY HAND (MANUALLY)	
3	4850M66R00	BOX ASSY, STRNG GEAR	CHASSIS2	1	1	1	1	1	1	1							1	1	1	1	1	1	1	1	FITTED WITH FRAME FOR THE STEERING FITMENT BY GUN	
4	45201M66RA0	ARM ASSY,FRONT SUSPENSION,R	CHASSIS2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	TAKE ARM FROM TROLLEY AND PLACE ON FRAME.	
5	45202M66RA0	ARM ASSY,FRONT SUSPENSION,L	CHASSIS2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	TAKE ARM FROM TROLLEY AND PLACE ON FRAME.	
6	11910M66R00	ROD COMP,ENG RR TRQ	CHASSIS2	1	1	1	1	1	1	1							1	1	1	1	1	1	1	1	INSERT THE TORQUE ROD ON FRAME AND ALIGN THEIR HOLES.	
7	11910M66R50	ROD COMP,ENG RR TRQ	CHASSIS2								1	1	1	1	1	1									INSERT THE TORQUE ROD ON FRAME AND ALIGN THEIR HOLES.	
8	45853-74P00	BOLT,SPNSN ARM FR BUSHING	CHASSIS2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	HAND TIGHT THE BOLT ON BOTH ARMS. TIGHT THE BOLTS WITH GUN.
9		TORQUING	CHASSIS2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	TORQUE THE BOLTS WITH SET VALUE OF 95 NM AND APPLY YELLOW MARK.
10	42441M74P00	BRACKET, FRONT STABILIZER BAR	CHASSIS2	2	2	2	2	2	2	2							2	2	2	2	2	2	2	2	2	FITTED BY GUN
11	42420M66R00	JOINT COMP,FR STABILIZER BAR	CHASSIS2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	INSERT THE BAR JOINT ON STABILIZER BAR.
12	08316M1010A	NUT,STABILIZER JOINT	CHASSIS2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	HANTIGHT THE BAR JOINT NUT. TIGHT THE NUT WITH GUN.
13		TORQUING	CHASSIS2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	TORQUE THE NUTS WITH SET VALUE OF 50 NM AND APPLY YELLOW MARK.
14	09113-12010	BOLT,TRQ ROD & SPNSN FRM	CHASSIS2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	HAND TIGHT THE BOLT ON TRQ ROD. TIGHT THE BOLT WITH GUN.
15		TORQUING	CHASSIS2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	TORQUE THE BOLT WITH SET VALUE OF 93 AND APPLY YELLOW MARK.
16	45851M66R00	COVER,TORQUE ROD	CHASSIS2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	PRESS FIT THE COVER ON FRAME.
17	09409M06322	CLIP,TORQUE ROD COVER	CHASSIS2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	FIT THE CLIPS ON COVER.
18	42431M66R00	MDUNT, FRONT STABILIZER BAR	CHASSIS2	2	2	2	2	2	2	2							2	2	2	2	2	2	2	2	2	MOUNTED ON FRAME BY GUN

NOTE:

Prepared By	Checked By	Approved By

Control No. AS1-Z-72-C1 Rev no. 00

PROCESS SHEET																				Date:	12-Oct-16					
Model : YJC																	STN :			BRAKE DRUM S/A						
S.NO	PART NO.	PART NAME	AREA	5MT VDI	5MT VDI	5AMT VXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	YIC VXI P06	YIC VXI P12	YIC ZXI P06	YIC ZXI P12	ZXI AMT P06	ZXI AMT P12	VXI AMT P12	PROCESS	
1	43402M68P01	HUB ASSY,REAR WHEEL	CHASSIS2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	TAKE A HUB AND PLACE ON S/A JIG.
2	56310M62R00	SENSOR COMP,RR WHEEL	CHASSIS2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	TAKE A SENSOR WIRE AND FIT ON HUB.
3	01550M0612A	BOLT,RR WHEEL SENSOR	CHASSIS2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	HAND TIGHT THE BOLT ON SENSOR WIRE. TIGHT WITH GUN AFTER HAND TIGHTENING.
4		TORQUING.	CHASSIS2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	TORQUE THE BOLT WITH SET VALUE OF 11NM. APPLY RED MARK.
1	53002M68P10	BRAKE ASSY,REAR,L	CHASSIS2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	TAKE BRAKE ASSY AND PLACE ON JIG.
2	54402M66R00	CABLE COMP,PARKING BRAKE,L	CHASSIS2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	TAKE PARKING CABLE AND INSERT IN BRAKE ASSY AND FIT IN LOCK OF BRAKE ASSY AND STUD.
3	08316M1006A	NUT,PARKING CABLE CAP	CHASSIS2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	HAND TIGHT THE NUT ON BRAKE ASSY STUD. TIGHT WITH GUN.
4	53001M68P10	BRAKE ASSY,REAR,R	CHASSIS2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	TAKE BRAKE ASSY AND PLACE ON JIG.
5	54401M66R00	CABLE COMP,PARKING BRAKE,R	CHASSIS2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	TAKE PARKING CABLE AND INSERT IN BRAKE ASSY AND FIT IN LOCK OF BRAKE ASSY AND STUD.
6	08316M1006A	NUT,PARKING CABLE CAP	CHASSIS2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	HAND TIGHT THE NUT ON BRAKE ASSY STUD. TIGHT WITH GUN.

NOTE:

Prepared By: _____ Checked By: _____ Approved By: _____

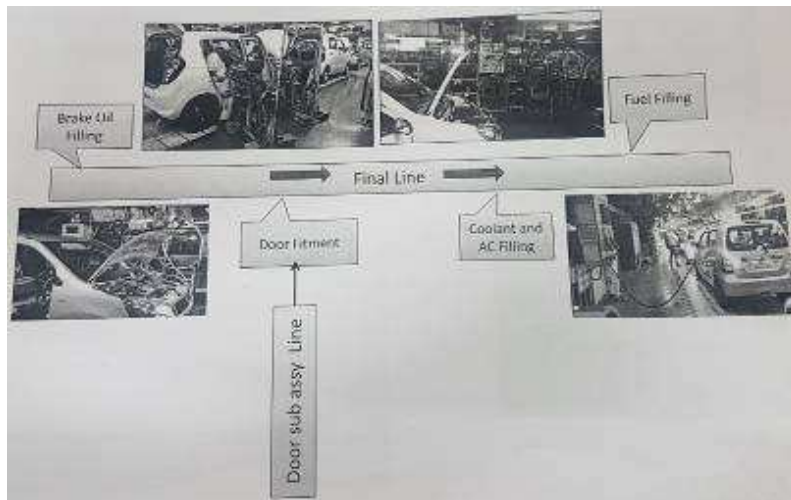
**PROCESS SEQUENCE OF IGNIS (YJC)
FINAL LINE (LINE 4)**

PROCESS SHEET																				Date:	13-Oct-16					
Model : YJC																	STN :			43R						
S.NO	PART NO.	PART NAME	AREA	5MT VDI	5MT VDI	5AMT VXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	5AMT ZXI	YIC VXI P06	YIC VXI P12	YIC ZXI P06	YIC ZXI P12	ZXI AMT P06	ZXI AMT P12	VXI AMT P12	PROCESS	
1		CHECK FUNDUSHI OF VEHICLE	FINAL1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2		ABS HARNESS COUPLER CONNECTION WITH ACTUATOR.	FINAL1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3		BRAKE OIL FILLING.	FINAL1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	FIT THE BRAKE OIL FILLING GUN ON BRAKE MASTER CYLINDER AND PRESS SWITCH TO START FILLING.
4		TIGHT CLAMP OF DEG TANK HOSES.	FINAL1															2	2	2	2	2	2	2	2	TIGHT THE CLAMP WITH PLIER AND APPLY BLUE MARK.
5		TORQUING OF AIR CLEANER.	FINAL1															4	4	4	4	4	4	4	4	SET VALUE 8.5 NM.
6		AIRBAG SCAN	FINAL1																							SCAN THE AIRBAG IN VTS SYSTEM
7		CONTACT COIL CHECK	FINAL1																							CHECK THE COIL POSITION IN CONTACT COIL WINDOW & APPLY CHECK MARK
8		CONTACT COIL LOCK REMOVAL	FINAL1																							BREAK THE LOCK TAB OF CONTACT COIL
9		STEERING WHEEL NUT TORQUING.	FINAL1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	TORQUING OF WHEEL NUT & APPLY RED MARK ON WHEEL NUT & COIL WINDOW
10	48150M66R20-C48	MODULE ASSY,AIRBAG	FINAL1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	CONNECT THE HARNESS COUPLERS AND APPLY RED MARK. PRESS FIT IN VEHICLE.
11																										

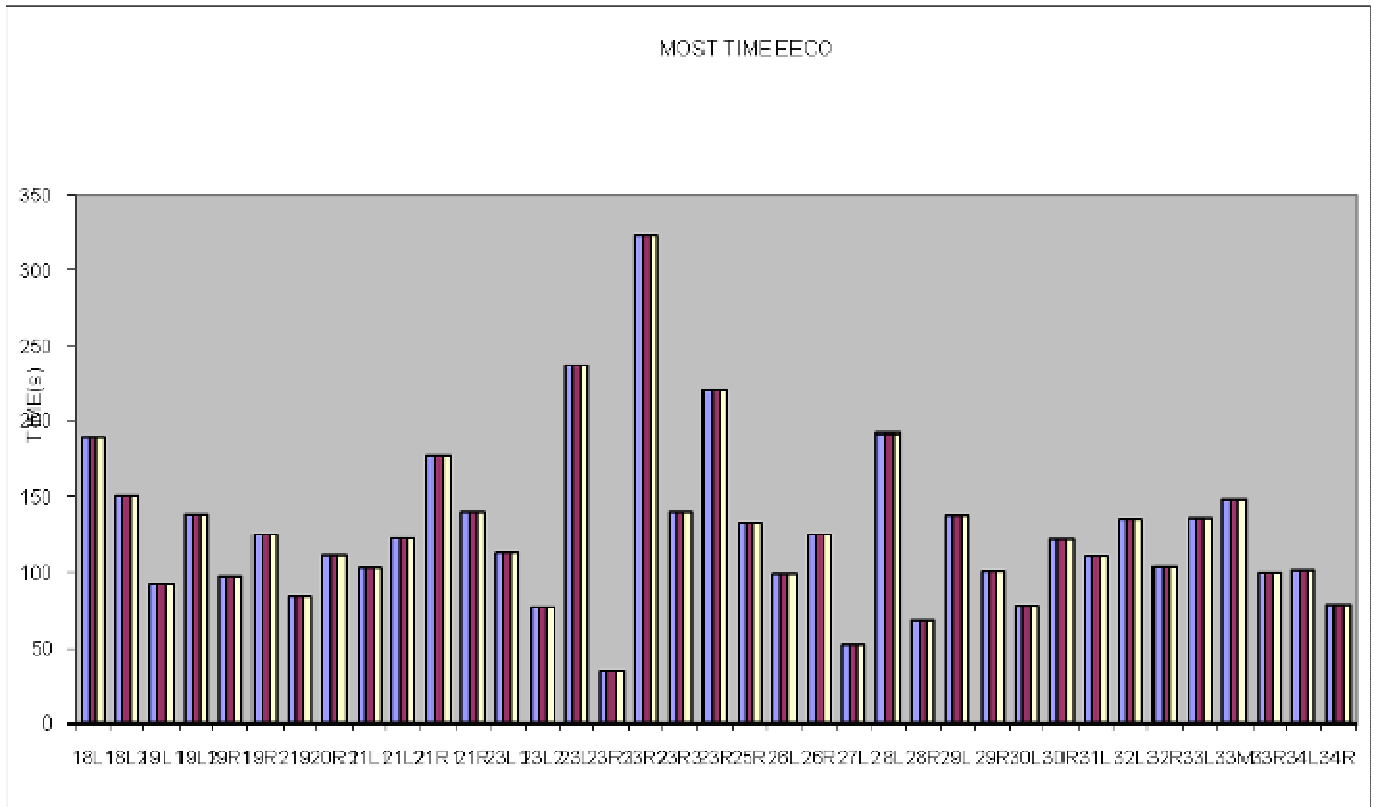
NOTE: Process change from date-10-Nov-2017
 Process addition from date-20-Nov-2017

Prepared By: _____ Checked By: _____ Approved By: _____

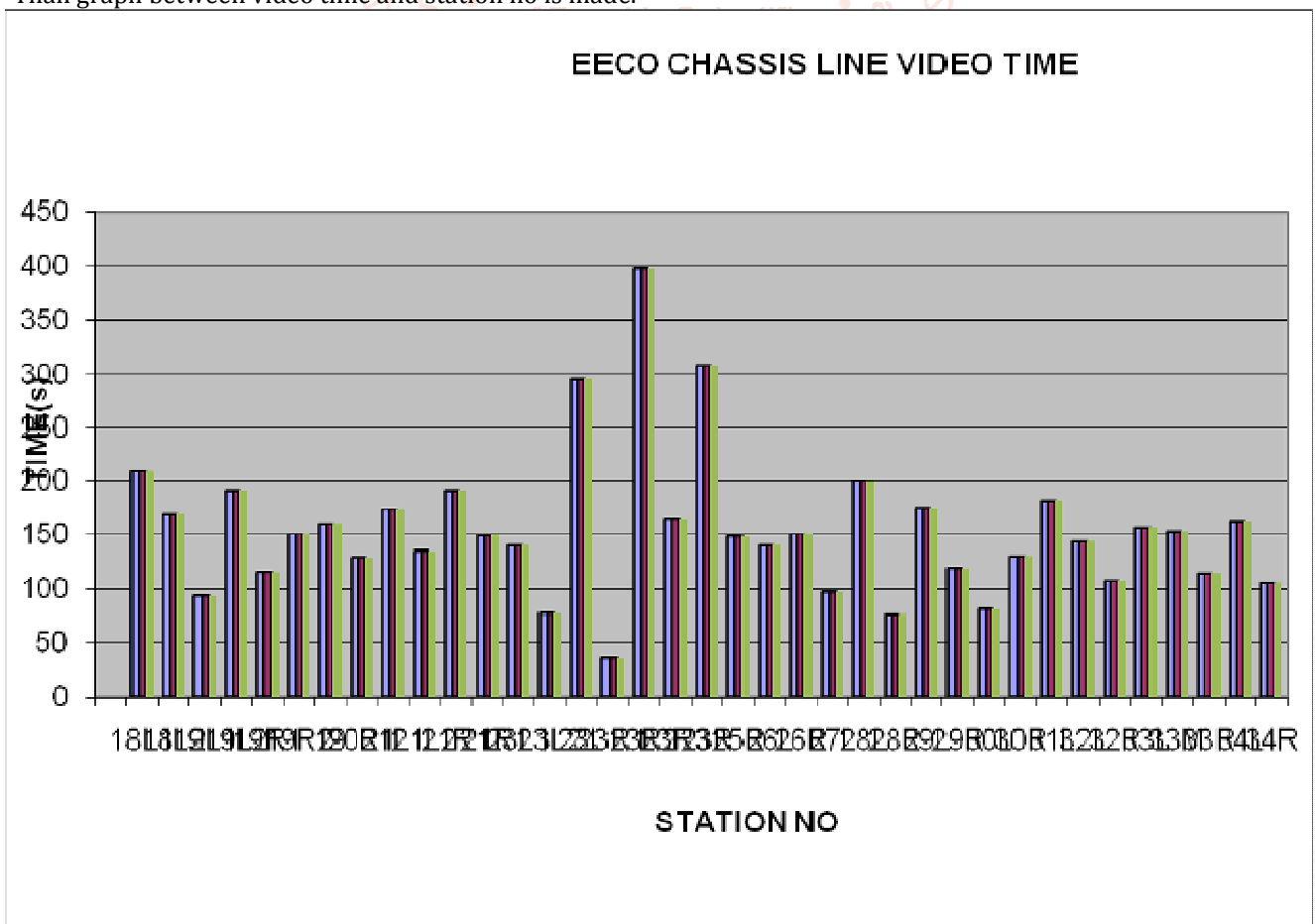
Control No. AS1-Z-72-C1 Rev no. 00



Here the process is divided into smaller parts and total most time of the work station is calculated.eg In the above sheet we have calculated the most time of work station 19R2. The main process carried out is rear axle mounting. Similarly most time of all the work station is calculated. After calculating the most time, graph is made with station no on the x axis.



➤ Than graph between video time and station no is made.



After it the graph between video and most time is made

After the graph standardization of manpower for fluctuating production volumes is calculated

**PROCESS SEQUENCE OF IGNIS (YJC)
TRIM LINE (LINE 4)**

PROCESS SHEET																				Date:	16/11/2016				
Model : YJC																		STN :		11R					
S. NO	PART NO.	PART NAME	AREA	5MT LXI	5MT VXI	5AMT VXI	5MT ZXI	5AMT ZXI	5MT ZXH	5AMT ZXH	5MT VDI	5AMT VDI	5MT ZDI	5AMT ZDI	5MT ZDH	5AMT ZDH	YJC VXI P06	YJC VXI P12	YJC ZXI P06	YJC ZXI P12	ZXI AMT P06	ZXI AMT P12	VXI AMT P12	PROCESS	
1	01551M1025A	BOLT,ENG MTG LH(BODY TO MTG)	TRIM2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	Fit the hand tight bolt eng mounting
2	01551M1025A	BOLT,ENG MTG RH(BODY TO MTG)	TRIM2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	Fit the hand tight bolt eng mounting
3	08316M1010A	NUT,ENG MTG LH(BODY TO MTG)	TRIM2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	Fit the hand tight nut eng mounting
4	08316M1010A	NUT,ENG MTG RH(BODY TO MTG)	TRIM2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	Fit the hand tight nut t eng mounting
5	11610M66R00	MOUNTING COMP,ENG RH	TRIM2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	Fit the mounting comp. ENG RH
6	11610M66R50	MOUNTING COMP,ENG RH	TRIM2								1	1	1	1	1	1									Fit the mounting comp. ENG RH
7	11620M66R00	MOUNTING COMP,ENG LH	TRIM2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	Fit the mounting comp. ENG LH
8	11620M66R50	MOUNTING COMP,ENG LH	TRIM2								1	1	1	1	1	1									Fit the mounting comp. ENG LH
9	23830M66R00	PIPE COMP,CLUTCH OIL RH	TRIM2								1	1	1	1	1	1									Fit the pipe comp ,clutch oil RH
10	27978-68P00	CLAMP,CLUTCH OIL PIPE NO.1	TRIM2								1	1	1	1	1	1									Fit the clamp ,clutch oil no.1
11	27978-68P30 27978-55R00	CLAMP,CLUTCH OIL PIPE NO.2	TRIM2								1	1	1	1	1	1									Fit the clamp ,clutch oil no.2
12	09115-06005	BOLT,HOOD SWITCH	TRIM2		1	1	1	1	1	1	1	1	1	1	1	1									Fit the bolt hood switch tight ,torquing with blue marking
13	37225M66R00	SWITCH ASSY,HOOD	TRIM2		1	1	1	1	1	1	1	1	1	1	1	1									Fit the switch assy ,hood
14	72420M66R00-5PK	GARNISH COMP. FR HOOD RH	TRIM2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	Fit the garnish comp .FR HOOD RH
15																									
16																									
17																									
18																									
19																									
20																									

NOTE: Part no changed through ECN no-55R-0549

Prepared By	Checked By	Approved By
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Control No. AS1-Z-72-C1 Rev no.00

STATION DETAILS CHSSIS LINE (EECO)

EECO CHASSIS LINE				
MODEL	5 STR AC	5 STR NON AC	7 STR NON AC	ALL
TOTAL (LEFT)	1893.58	1893.58	1893.58	1893.58
TOTAL (RIGHT)	1588.51	1588.51	1588.51	1588.51
OVERALL TOTAL(LT+RT)	3482.09	3482.09	3482.09	3482.09
STATION (130 VEH./203 Sec)	17.15	17.15	17.15	17.15
OVERALL TOTAL(5 Sec Extra)	3567.86	3567.86	3567.86	3567.86
STATION (130 VEH./203 Sec)	17.58	17.58	17.58	17.58
STATION (150 VEH./176 Sec)	19.78	19.78	19.78	19.78
OVERALL TOTAL(5 Sec Extra)	3581.01	3581.01	3581.01	3581.01
STATION (150 VEH./176 Sec)	20.27	20.35	20.35	20.32
STATION (175 VEH./158 Sec)	22.04	22.04	22.04	22.04
OVERALL TOTAL(5 Sec Extra)	3592.28	3592.28	3592.28	3592.28
STATION (175 VEH./158 Sec)	22.74	22.74	22.74	22.74
STATION (200 VEH./132 Sec)	26.38	26.38	26.38	26.38
OVERALL TOTAL(5 Sec Extra)	3613.99	3613.99	3613.99	3613.99
STATION (200 VEH./132 Sec)	27.38	27.38	27.38	27.38
STATION (220 VEH./120 Sec)	29.02	29.02	29.02	29.02
OVERALL TOTAL(5 Sec Extra)	3627.18	3627.18	3627.18	3627.18
STATION (220 VEH./120 Sec)	30.23	30.23	30.23	30.23
STATION (250 VEH./105 Sec)	33.16	33.16	33.16	33.16
OVERALL TOTAL(5 Sec Extra)	3647.90	3647.90	3647.90	3647.90
STATION (250 VEH./105 Sec)	34.74	34.74	34.74	34.74

INCREASE IN PRODUCTIVITY DUE TO DECREASE IN MANPOWER

- Present production plan = 250
- Present manpower for above plan = 37
- As per MOST, man power required = 35
- Thus total man power saving = 2 (just in Chassis area for EECO)

CONCLUSION OF TRAINING SEMESTER

The 6 WEEKS stay at Maruti Suzuki India Ltd. Gurgaon has been a great learning curve which I will always cherish. I was able to see the concepts and the topics I have studied being implemented that further enhanced my understanding of them.

I was involved in an important project which was interesting and concerned Productivity and thus I was able to learn many different things in my six weeks tenure as well as go into the depth of some.

Apart from these the evident presence of robots, fundamentals of Industrial Engineering and TQM in the industry, made me realize the importance of the subjects taught to us as a part of our curriculum.

Besides their was an increasing emphasis laid on man power reduction , increse in labour productivity and labour cost cutting.

The industrial training over a period of six weeks is indeed very valuable as now I know how it is to work in the industry. Hence will go a long way to help me in my career.

BIBLIOGRAPHY

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- [2] TRAINEE (AUTHIOR):- SAHIL

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