

Stopwatch Time Study in Automobile Industry: A Case Study

About the Client

- Client is a Japanese multinational manufacturer of motorcycles, marine products such as boats and outboard motors, and other motorized products.
- Client is one of the largest manufactures of bike in India .

Aims/Objectives

- Work content measurement using stopwatch time study.
- Cycle Time Calculation.
- Resource calculations i.e., manpower as well as machines.

Key Points

- Easy and accurate cycle time calculation.
- Interactive sheet linked with formulas for getting dynamic results.
- Manpower calculation on each and every station.
- Improvement points to client to future use.

Client's Challenge

- Reduction in manpower fatigue.
- Identify true potential capacity of plant.
- Calculation of exact work content required to make one unit of product.

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 – Stopwatch time study estimation and validation with client team.
3. Making client time familiar with stopwatch study technique for easy understanding.
4. Results and Conclusion – Sheets for work content estimation, 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-

- Visit to client site and understanding the plant before starting data collection.
- Shooting of videos using high tech cameras for better capturing of data collection.
- Interaction with client to understand process from videos.

Data Analysis -

- Preparation of sheets of stopwatch time study multiple readings and validation by client.
- Analysis (Optimum manpower utilization & identifying cycle times and capacity of plant).
- Work content sheet preparation for cycle time as per demand and adding allowances to it.
- Improvement & suggestions for fatigue reduction & making existing system better.

Results & Conclusion

After doing analysis and evaluation following results were obtained –

1. Actual cycle time for operations were obtained.
2. Adding allowances to normal cycle helped to optimize production and manpower.
3. Sheets for future planning as per demand & as per working lines.

ML - L1 Stage 1																						
IYM PROCESS SEQ. No.	ACTIVITY DESCRIPTION	R7			R8			R9			R10			AVG. OBSD. TIME (Min)	VA	NVA	SVA	RATING	NORMAL TIME	ALLOWANCES	STD. TIME	REMARKS
		V. START	V. END	VALUE																		
	ONE CYCLE OPERATION												A				B	= Ax B= C	D	= C + (C x D)= E		
70	CHECK TORQUE (ALL FOUR BOLTS)	7.09	7.18	9	7.52	8.01	9	8.24	8.34	10	9.00	9.08	8	0.15	0.10		0.05	80%	0.12	0%	0.12	
80	PUT MAGIC MARK ON ALL FOUR BOLTS OF FRONT FENDER	7.18	7.22	4	8.01	8.04	3	8.34	8.38	4	9.08	9.12	4	0.06	0.00		0.06	80%	0.05	0%	0.05	SVA for inspection and MM ;
90	REMOVE FRONT AXLE FROM TFF SUB ASSEMBLY	7.22	7.23	1	8.04	8.05	1	8.38	8.39	1	9.12	9.13	1	0.03	0.03			85%	0.02	0%	0.02	
100	KEEP TFF SUB ASSY ON CONVEYOR JIG	7.23	7.26	3	8.05	8.07	2	8.39	8.41	2	9.13	9.15	2	0.04	0.04			85%	0.04	0%	0.04	
110	APPLY GREASE & SET RETAINER BALL CAGE TO FRONT FORK	7.34	7.43	9	8.07	8.17	10	8.41	8.50	9	9.15	9.24	9	0.14	0.09		0.05	80%	0.11	0%	0.11	
140	TAKE UP TFF SUB ASSY FROM CONVEYOR AND SET TO FRAME	7.43	7.47	4	8.17	8.21	4	8.50	8.55	5	9.24	9.37	5	0.07	0.07			85%	0.06	0%	0.06	Ignore Time- R5= 2 Sec; R10= 8 Sec This is Stage 2 Activity but operator performed only on satge 1, R1 and R3 Activity Operator Not performed while Video Shooting
130	ROUTE BREATHER PIPE OF BATTERY	7.47	7.52	5	8.21	8.24	3	8.55	9.00	5	9.37	9.43	6	0.11	0.11			80%	0.08	0%	0.08	R1,R3,R4,R10 This Activity Operator Not performed while Video Shooting
	MATERIAL HANDLING OPERATION																					
	Total Time													0.59	0.43	0.00	0.16	82%	0.48		0.48	

Contact Details

Name of Organisation	Production Modeling India, Nagpur
Contact Name	Pavan Nikhare
Email Address	pnikhare@pmcorp.com
Website	www.pmicorp.in