

Productivity improvement by using MOST in sheet metal Industry

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Abstract— In A Micro Scale Manufacturing Enterprise (MSME) for mechanical and manual assembly lines, which can be applied similarly well to single, multi- and mixed-product assembly lines with either deterministic operation times or stochastic operation times. The methodology starts from a appropriate assembly system selection and afterward decides suitable cycle times, parallel workstation requirements, and parallel line application for the type of assembly system being selected. An efficient number of workstations are decided with the aid of workstation combining options liable upon the truthful data provided. The end outcome is the detailed design of a manufacturing assembly line.

Keywords— **MOST, Productivity, improvement, technique, sheet metal.**

I. INTRODUCTION

Work measurement is a methodical procedure for the analysis of work and determination of time required performing main tasks in processes, it is characteristically based on time standards for manual tasks. The problem of the Methods Time Measurement (MTM) system in the 1940s was a significant step forward in analytical work measurement. It is defined as `a technique which analyses any manual operation or method into the basic motions required to perform it. MTM assigns to each motion a predetermined time standard which is determined by the nature of the motion and the conditions under which it is made. One of the main problems in applying MTM to industrial operations is that it is very tedious and time overwhelming, since a work analyst must observe and manuscript each movement in great detail. In addition, such method produces large amounts of data which must be managed. The development and release of the MOST in the 1960s improved many of these problems, since it is much simpler and more efficient. It classifies all human movements into three basic categories, and the description of each category is done by assigning values to only a few standard parameters. It is the latest work measurement technique that can be effortlessly implemented and practically maintained to not only estimate the standard time but also improve methods and maximize the resource utilization.

MOST Methodology: MOST is the newest work measurement technique that can be effortlessly implemented and practically upheld to estimate the standard time and also improve methods which maximize the resource utilization. It was originally industrialized by H. B. Maynard & Company Inc. and has three forms: Basic MOST for the activities between 20 sec to 2 min, Mini MOST for the activities shorter than 20 sec, and Maxi MOST for the activities above 2 min. MOST focuses on three types of object movements Such as General Move, Control Move, and Tool Use which are briefly explained hereunder

II. METHODOLOGY

Maynard Operating Sequencing Technique (MOST)

(a) Important Component of MOST

(b) Types of Sequence

(a) Important Component of MOST Takt is a German word meaning “Conductors Baton”. Takt time matches the speed of the manufacturing process to customer demand. Each manufacturing process works to the takt.

Takt = Total time available / Total customer demand

(b) Types of Sequence Sequence models signify the sequence of events that occurs when an object is moved or a tool is used. Predefined sequence models signify different types of activities.

General Move (moved freely through space):- spatial displacement of an object. The object follows an unrestricted path through the air.

Controlled Move (movement restricted; attached or in contact):- The movement of objects along a controlled or restricted path.

Tool Use (using common hand tools): - Combination of General Moves and Controlled Moves

III. FIGURES AND TABLES

TABLE I
OPERATION DESCRIPTION (UTENSIL- OIL SPOON CUP)

Op. no	Operation description (Utensil- Oil spoon cup)	Most time (Sec)
1	Punching operation	3.2
2	Drawing operation	3.5
3	Edge cutting operation	4.2
4	Internal buffing operation	7.2
5	External Buffing operation	5.7
6	Notching operation	4.1
	Total Time	27.9 sec

TABLE II
OPERATION DESCRIPTION (UTENSIL- OIL SPOON HANDLE)

Op. no	Operation description (Utensil- Oil spoon handle)	Most time (Sec)
1	Punching operation	3.4
2	Drawing operation	3.5
4	Upper buffing operation	7.2
5	Lower Buffing operation	7.2
6	Bending	3.1
	Total Time	24.5 sec

TABLE III

OPERATION DESCRIPTION (UTENSIL- OIL SPOON ASSEMBLY)

Op. no	Operation description (Utensil- Oil spoon Assembly)	Most time (Sec)
1	Spot welding	5.4
2	Packaging	6.5
	Total Time	11.9 Sec

IV. CONCLUSION

We will obtain below out come after completed product assembly line with the help of Trupti Metal Work. Operating time of the operation description (Utensil- Oil spoon cup) is 27.9 sec and Operation description (Utensil- Oil spoon handle) is 24.5sec and Operation description (Utensil- Oil spoon assembly) is 11.9sec. MOST and line balancing of assembly line some problem is solved.

- Decreases process time of the product
- Drop of workstations
- Decreased work-in-progress inventory
- Minimizing of lead time
- Decrease of capital and operating costs

REFERENCES

- [1] Bard, J. F. (1989). Assembly line balancing with parallel workstations and dead time. International Journal of Production Research, 27 (6), 1005-1018
- [2] Womack, J., Jones, D., and Roos, D. (1990). The Machine that changed the world. Rawson Associates, New York. Garg, S., Vrat, P., and Kanda, A. (1994). Work Culture in JIT environment. Productivity, 35,463-466.
- [3] Genaidy, A. M., Agrawal, A., and Mital, A.(1990) Computerized predetermined motion time systems in manufacturing industries, Computers & Industrial Engineering, vol.18, no.4, pp.571-584
- [4] Wild, R. (1975). Work organization, a study of manual work and mass production, New York: Wiley.
- [5] Genaidy, A. M., Mital, A., and Obeidat, M. (1989). The validity of predetermined motion time systems in setting production standards for industrial tasks, International Journal of Industrial Ergonomics, vol.3, no.3, pp.249-263,