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Micro- Motion Study of Worker

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ABSTRACT:

Time and Motion study refers to a broad branch of knowledge dealing with the systematic determination of preferable work methods, with thedetermination of the time required for the use of human or machine to perform the work by the stipulated method. This paper presents a study onutilization of time and motion study techniques applied to a production line of cotton yarn manufacturing industry. The study was done on two machinei.e. comber and ring corner machine in cotton mill. All the activities and number of activities done on the machine was categorized like operation, inspection,delay, storage, transport etc. On the basis of the sequence of the activity flow process chart were made, total distance travelled during the whole activityfor one hour was measured and summarized. The analysis of whole activity was done through observation method.

Keywords: Cotton Mill, Motion and Time

Introduction:

Motion study is a systematic way of determining the best method of doing the work by scrutinizing the motions made by the worker or the machine. As per Gilbreath it is the science of eliminating the wastefulness due to unnecessary motions. He was interested in finding the one best way to do the job. Motion study makes all activity interesting. It consists of analyzing an activity into its smallest possible elements. There is a close link between time study and motion study, both are work measurement techniques which are used by industrial engineers to enhance the performance or the operational efficiency. Motion study concerned with the reduction of work content, wastes and posture difficulties that leads toworker fatigue and aims for establishing the best possible way of doing work whereas time study is concerned with investigati ng and reduction of anynon-value added activities associated with the job and establishing standard time for an operation **(Guha and Verma, 2020).**

Motion study implies dividing the work into fundamental elements or basic operations of a job or a process with the object of eliminating unnecessary or defective elements in a job. After investigating all movements in a job, process or operation it finds out the most scientific and systematic method of performing the operation or completing the job**(Puspender pal).**Micro motion study technique is best suited for those operations or activities which are of short duration and which are repeated hundreds of time. These are the operations or motions which require very small time and it is quite difficult to measure time for these motions accurately and the time required by these motions cannot be neglected due to repetitive operations**(Smriti Chand).**Micro motion study is one of the most accurate techniques of work analysis used for work improvement. It makes use of motion pictures of the different activities or movement, so with the help of camera. Very small time upto 0.0005 minute can be measured and recorded by this system.

The five basic principles of micro economy are:

1) Principle of minimum movement
2) Principle of natural movement
3) Principle of habitual movement
4) Principle of rhythmic movement
5) Principle of symmetrical movement

By utilizing the time and motion study, a better way to perform the operations of a process can be developed. To each operation, standard motion and time are assigned, which must be followed so that the organization finds better results in the market in which it operates **(Henrique et al., 2018).**

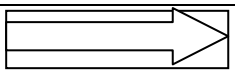
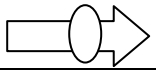
Time and motion study (TMS) assist management to determine how much is produced by workers in a specific period of time, therefore making it easier to predict work schedules and output **(Ghani et al., 2020).**

METHODOLOGY:

Present study was conducted in DCM, Cotton Mill, Hisar. To study the time and motion during the working on the machine. In DCM Cotton Millthere were lots of machine on which different types of operation or activities were done. So, I took only two machine for easy and effective study i.e.comber and ring corner. Complete analysis on these two machine were done. Every activity going on the machines there time taken and the motionduring performing activity were observed and noted down for one hour. Every activity was categorized under the specific activity. Flow process chartwere

made by using the symbols of the activity and at last summarization of all activities were done. Findings were analysed, discussed and reported.

- Symbols of different Activities

ACTIVITY	SYMBOL
Operation	
Inspection	
Transport	
Delay	D
Storage	
Operation and inspection	
Change point	
Transport and inspection	
Operation and transport	

FINDINGS AND DISCUSSION:

The findings from the present study was presented and discussed below:

- **Comber machine**

Observation of activity worker engaged in comber machine classified under the categories of operation, inspection, transportation, delay, operationand inspection, change point and operation and transportation

1. Operation:

- Operating the machine (4 times)
- Cleaning of floor(2 times)
- Cleaning floor near LD2 machine
- Put empty dipu in rack (1 time)
- Remove extra sliver from filled dipu (2 times)
- Remove waste from comber (3 times)
- Remove sliver from empty dipu (4 times)
- Fix dapoo in machine (2 times)
- Fix dipu in dipu stand (2 times)
- Cleaning of floor (RSB, LH, comber machine)
- Remove waste from can of lap former

2. inspection:

- Note down the no. Of drums filled in register (1 time)
- Inspection done by worker

3. Transport:

- Pushing empty drums(from LD2 machine) (1 time)
- Pushing sliver filled drum towards LD2 machine (1 time)
- Pushes empty can from lap former

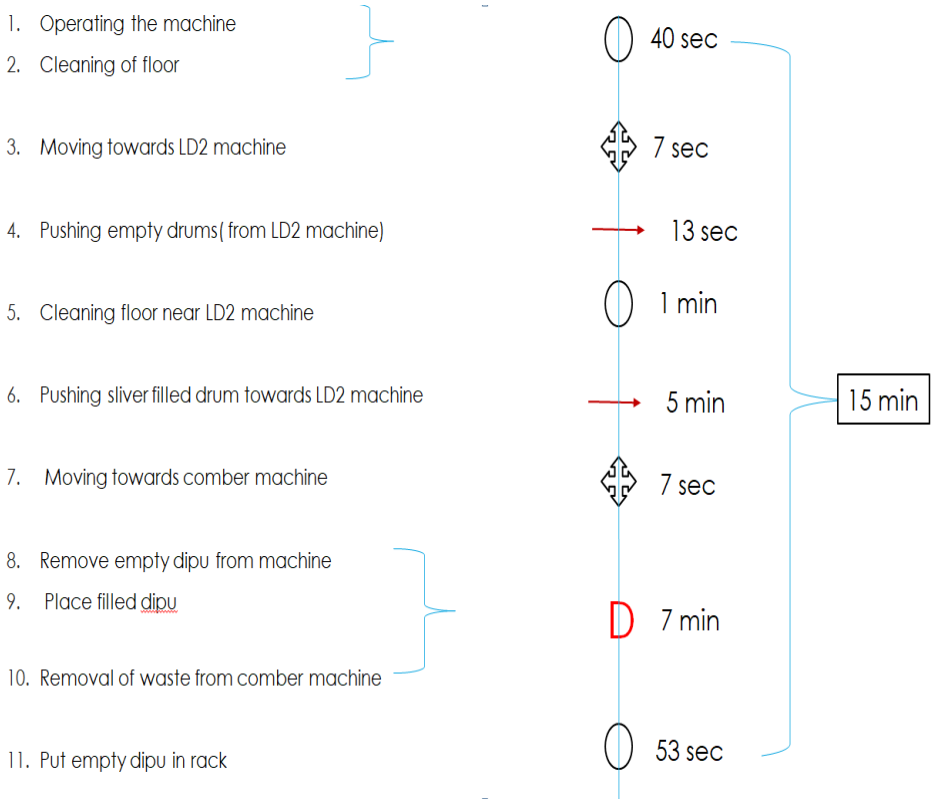
4. Delay:

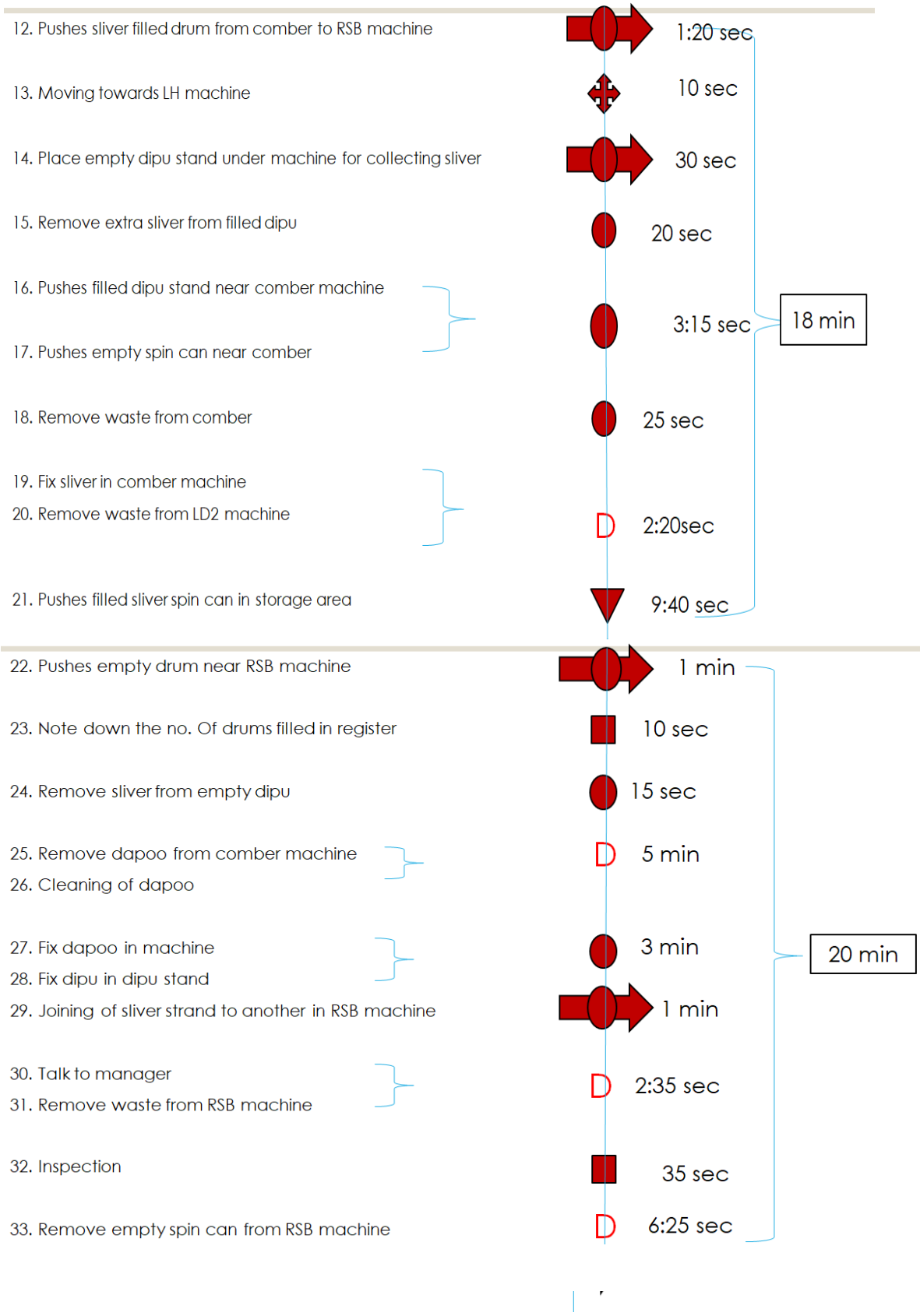
- Remove empty dipu from machine (3 times)
- Place filled dipu (3 times)
- Removal of waste from comber machine (2 times)
- Fix sliver in comber machine (7 times)

- Remove waste from LD2 machine (2 times)
- Remove dapoo from comber machine (2 times)
- Cleaning of dapoo (2 times)
- Talk to manager
- Remove waste from RSB machine (1 time)
- Remove empty spin can from RSB machine (3 times)

5. **Storage:**
   - Pushes filled sliver spin can in storage area (3 times)
6. **Change point:**
   - Moving towards LD2 machine (1 time)
   - Moving towards comber machine (6 times)
   - Moving towards LH machine (3 times)
   - Moving towards lap former
7. **Operation and transport:**
   - Pushes sliver filled drum from comber to RSB machine (4 times)
   - Place empty dipu stand under machine for collecting sliver (3 times)
   - Pushes filled dipu stand near comber machine (3 times)
   - Pushes empty spin can near comber (5 times)
   - Pushes empty drum near RSB machine (3 times)
   - Joining of sliver strand to another in RSB machine (2 times)
   - Pushes filled can towards lap former and fix them

Flow process chart of activity:





This study was conducted to analyze the motion and the work of the worker during working on machine. For the study one female worker was analyzedfor one hour. She was working there from last 1 years and in starting she took 4 days training for the work. The distance travelled during the wholeactivity was 1km. In this flow process chart all the activities were given in the sequence as per the work done on the machine. This also shows the time taken by the individual activities.There were numbers of the activities done with machine like operation, inspection, transportation, changing

point. Worker has to do two activities simultaneously like operation and inspection,operation and transportation.

Table 1.

S.NO	Activities	Total no.
1	No. of operation	**14**
2	No. of inspection	**3**
3	No. of storage	**4**
4	No. of delay	**22**
5	No. of transport	**5**
6	No. of change point	**14**
7	No. of operation and transport	**21**
8	Total distance traveled	**1.0 km**
9	Total time	**1 hour**

it was observed from Table 1 that duration of the study was one hour and total distance travelled during one hour while doing activities were 1km. It was also observed that total numbers of operation during the activity were 14, 3 times inspection were done of the activity by both the workerand the manager, transportation of the can's from one to another were done 5 times, 22 times activity were stopped due to sliver filled dapu is empty or dipu is removed for cleaning or anyother reason, changing of the can's were also done I.e. 4 times , operation + transportationwere also done simultaneously 21 times.

- **Ring corner machine:**

Classification of all the activities which was going on the machine under the catergories of operation, inspection, transportation, delay, operationand transportation

1. **Operation:**

- Work is already going on
- Remove waste from machine
- Removal of filled packet
- Place bobbin(reject branch to main branch)
- Operating the machine
- Put bobbin into bobbin holder
- Remove filled bobbin
- Remove empty bobbin from main branch
- Fixing bobbin

2. **Inspection:**

- Doing inspection

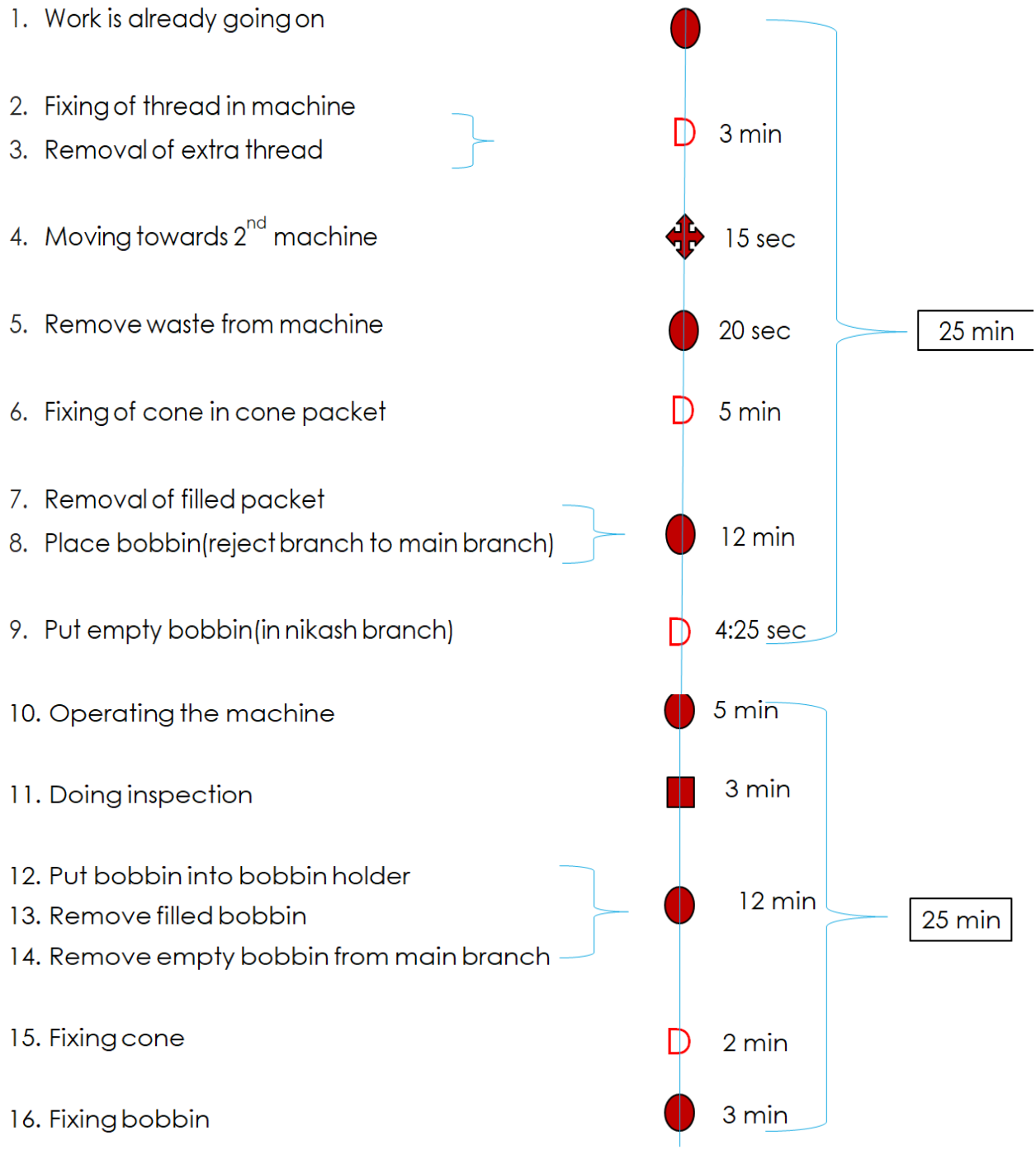
3. **Delay:**

- Fixing of thread in machine
- Removal of extra thread
- Fixing of cone in cone packet
- Put empty bobbin(in nikash branch)
- Fixing cone

4. **Change point:**

- Moving towards 2^{nd} machine

Flow Process Chart of the Activities:



In this activity one female worker was studied who was working on ring corner machine. Shewas working there from last 5 years and in starting she took

training of 9 days. Activity was studied for 1 hour. This flow process chart shows all the activities in the sequence as per the work was done on the machine. In this activity it was found that worker has to work continue because the the observation of machine necessary if there was any kind of problem occurred that can be solved immediately.

Table 2.

S.NO.	Activities	Total no.
1	No. of operation	25
2	No. of inspection	1
3	No. of delay	26
4	No. of change point	5
5	Total distance traveled	1.16km
6	Total time	1 hour

It was observed from Table 2 that duration of the study was one hour and total distance travelled during one hour while doing activities were 1.16km. It was also observed that total numbers of operation during the activity were 25, 1 times inspection were done of the activity by the worker 26 times delay of the activity were occur due to the breakage of yarns and 5 times changes point from one machine to another.

Conclusion:

Through the micro motion study of worker we conclude that each and every time period activities of using comber and ring corner machine should be in proper sequence. These activities are represented by proper symbols by using micro motion study of worker. We can estimate the time of work done in particular time period. Worker has to do continue work without taking rest in between because continues observation of the activity has to done to avoid any kind of delay. It shows that there werenumber of operation, inspection, changing point, transportation and also two activities were done simultaneously. All the motion and time during theworking of worker were analyzed and reported.

References:

Ghani, U., Hayat, M., Khalid, Q.S. and Azam, K. (2020). Productivity Improvement through Time and Motion Method. International l Journal of Engineering and Technology, 12(2):108-123.

Henrique, P., Cury, A. and Saraiva, J. (2018). Time and Motion study applied to a production line og organic lenses in Manaus Industrial Hub. Gest. Prod., Sao Carlos, 25(4): 901-915.

Guha, S. and Verma, D.S. (2020). Time and Motion Study in an Manufacturing Industry. Journal of Emerging Technologies and Innovative Research, 7(8): 2066-2072.

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https://managementation.com/what-is-motion-study/