IE223L Workstudy and Methods Engineering

Student Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Program: BS Industrial Engineering

## Lab 04: To draw the man m/c of the part produced.

## Apparatus

1. Work piece
2. Stop watch
3. Lathe machine
4. Shaper machine

## Theory:

## Man, Machine Chart

A man-machine chart is a chart in which the activities of more than one worker or machine are recorded. Activities are recorded on a common time scale to show the inter-relationship. It is also known asMultiple Activity Chart. Although the process chart and the flow diagram give a picture of the various steps in the process, it is often desirable to have a breakdown of the process or of a series of operations plotted against a time scale. Such a picture is called An Activity Chart**.** The operator and the machine work intermittently on some types of work. That is, the machine is idle while the operator loads it or while he or she removes the finished work from it and the worker is idle while the machine is in operation. It is desirable to eliminate idle time for the worker, but it is equally important that the machine be kept operating at near capacity as possible.

The first step in eliminating unnecessary waiting time for the operator and for the machine is to record exactly when each works and what each does. Such a record is calledMan & Machine Chart. It is used when a worker operates a number of machines at a time. It is also used when a number of workers jointly do a job. Activities of workers or machines are recorded in a separate vertical column (bars) with a horizontal time scale. The chart shows the idle time of the worker or machine during the process. By carefully analyzing the chart, we can rearrange the activities. Work load is evenly distributed among the workers or machines by this the idle time of worker or machine is reduced. Multiple Activity Chart is very useful in planning team work in production and maintenance. Using the chart, we can find out the correct number of machines that a worker can operate at a time. We can also find out the exact number of workers needed to do a job jointly.

To record the time, ordinary wrist watch or stopwatch is used. High accuracy is not needed. Man-machine chart is a type of Multiple activity chart. Here, the activities of a number of machines are recorded.

An example of Man-Machine Chart is shown in figure 1. Here one operator two semi-automatic machines simultaneously. The activities of the operator are recorded in a separate vertical column. The activities of the two machines are recorded in two separate vertical columns. The different activities like loading, machining and unloading are represented by different symbols. Blank space shows the idle time.

Many operations consist of three main steps:

1. GET READY, such as putting material in the machine,
2. DO (doing the work), such as drilling a hole; and
3. Waiting for an operation to be completed or “idle”.

The Man-Machine Chart, or Simo chart, is a planning industrial graphically defining resources’ activity (robots, operators etc.) at repetitive tasks. It is typically used to plan the activity of resources in large and medium series. Very often a clearer picture of the relationship of the operators’ working time and the machine time can be obtained by showing the information graphically to scale.

## Cycle Time

Each resource continually performs the same tasks. When the last task is completed, the resource runs again the first task. This estate is called **Cycle.** A diagram is constituted of tangled cycles. The duration of the longest cycle is called **Time of Cycle.** It is usually the time needed to produce or assemble a piece.

## Operator Cycle Time

Time total time required for a worker to complete one cycle of an operation

## Machine Cycle Time

Total time for a machine to finish one complete cycle is Cycle Time. It includes loading n unloading.

## Objective:

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## Procedure

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## Observations & Calculations

1. Get Ready
2. Do
3. Put away or clean up

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr #** | **Operator** | **Man** | | **Machine** | |
| **Time** | **Remarks** | **Time** | **Remarks** |
|  |  |  |  |  |  |
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## Summary

|  |  |  |
| --- | --- | --- |
|  | **Man** | **Machine** |
| **Idle Time** |  |  |
| **Working Time** |  |  |
| **Total Cycle Time** |  |  |
| **Utilization in %** |  |  |

## Comments

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