

# Time Study (Stop watch)

# Objectives

- The objective of this lab is to give you some practical experience in time study.
- You will see a video of short cycle task, divide the task shown video into elements, collect pilot data, and then process that data to find standard time for the task.

# Time Study

- Time study is used to determine the time required by a qualified and well-trained person working at a normal pace to do a specified task.
- Time study is the technique for establishing an allowed time standard to perform a given task.
- The result of time study is the time that a person suited to the job and fully trained in the specified method will need to perform the job if he works at a normal or standard speed. This is called standard time.

# Time study

- Familiarize yourself with the stopwatch (OR windows movie maker software).
- Observe the task (i.e. IE441\_Lab Video)

- Divide all manual work into elements (Fundamental hand motion or Therbligs), and write down on your time study form.
  1. Get the wire & circuit board
  2. Assemble the wire to circuit board
  3. Assemble the lower cover sub-assembly
  4. Fix the upper cover
  5. Get the screw and put in assembly.
  6. Tight the screw with screw driver.
  7. Put the final assembly in bin



# Data Analysis

- Determine mean time and standard deviation for each element.
- Based on this pilot data, determine the number of cycles to observe for a full time study. (for complete operation).
  - How many cycles should you study for 95 percent confidence level and a precision of  $\pm 5\%$
  - How many cycles should you study for 95 percent confidence level and a precision of  $\pm 10\%$

# Data Analysis

- Assume that you conducted your actual time study, and average cycle time turned out to be the same as from the pilot study you have conducted....

Actual time = Average of five readings



# Data Analysis

- Performance rating is a part of the time study process. What rating would you provide to supplement the time data you collected? (How much did the operator produce during the time you made your observations, relative to what you would expect from a “normal” operator?) [Show all your work]
  - Skill
  - Effort
  - Conditions
  - Consistency

Normal Time = Actual time X (1 + Rating Factor)

# Data Analysis

- In order to calculate the standard time for the task, allowances are typically added. What allowances do you think should be included for this particular task? (Briefly explain your response.)
  - Personnel allowance
  - Fatigue Allowance
  - Delay Allowance

# Analysis

- Calculate the standard time for the task.  
(Show your all work in details)

$$\text{Standard time} = \text{normal time} * (100/100-\text{Allowances})$$

- What would the hourly production rate be for one operator? (Show your all work in details).

$$\text{Hourly production} = 3600 / \text{standard time in sec.}$$