

# Optimizing Garment Production Efficiency: A Comprehensive Guide to Time Study and Method Study

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**Abstract:** Optimizing garment production efficiency is vital for improving productivity, reducing costs, and ensuring timely deliveries. This guide explores two key techniques: Time Study, which analyzes task durations to identify inefficiencies, and Method Study, which focuses on refining production methods to eliminate unnecessary motions. By integrating both approaches, manufacturers can standardize processes, streamline workflows, and enhance overall efficiency. This guide offers practical insights and methodologies to help producers reduce waste, improve output, and shorten lead times.

Key Words: Industrial Engineering, Production Efficiency, Time Study, Method Study

#### Introduction

Industrial engineering is one of the most diverse fields of engineering because the word "industry" has a very broad meaning. It refers to the production of all economic goods within an economy. Because there are so many different kinds of industries<sup>3,4</sup>. Industrial engineering originated with the studies of Taylor, the Gilbreths, and other pioneers of mass production methods. Their work expanded into responsibilities that now include the development of work methods to increase efficiency and eliminate worker fatigue; the redesign and standardization of manufacturing processes and methods for handling and transporting materials; the development of production planning and control procedures; and the determination and maintenance of output standards for workers and machines. Today the field is characterized by an emphasis on mathematical and computer modeling<sup>5,6</sup>.

#### **Time Study**

Time Study is a systematic method of analyzing the time required for performing tasks in the production process. It helps identify inefficiencies, standardize tasks, and optimize workflows to improve overall productivity and reduce costs. The goal is to measure the time taken for each task, break down the production process into smaller components, and set performance benchmarks<sup>1,2</sup>.

Time study includes the following:

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- a. Selection of operation
- b. Breakdown the operations into elements
- c. Time recording
- d. Performance rating
- e. Allowance calculation
- f. Standard time calculation
- g. Data analysis and implementation
- h. Validation and continuous improvements

# **Time Study Sheet**

Style No: KRW25K		Unit Name: APT	Operarion: Sleeve hem
Buyer: TEA		Line No: 12	Operator Name: Kani
Date: 15.02.2025		Garment Size: L	Observer Name: Renas
Cycle No	Cycle Time (in Sec)	Quality Requirements	Calculation
1	29	As Per OS	Average Cycle Time: Performance rating: Normal Time: Allowance % Allowance Time: SMV: No. of Pass Pieces: FTT:
2	30	As Per OS	
3	27	As Per OS	
4	29	As Per OS	
5	31	As Per OS	

## Method Study

Method Study is a systematic approach used to analyze and improve the methods of performing tasks in a production process. The main goal is to streamline operations, eliminate unnecessary motions, and improve efficiency by identifying better, more effective ways to perform tasks. By improving methods, it is possible to enhance productivity, reduce costs, and optimize resources<sup>7</sup>.

Method study includes:

- a. Selection of the work / process to be studied
- b. Recording the current method
- c. Critical examination of the existing method
- d. Developing an improved method
- e. Evaluating the new method

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## **Sleeve Hem Stages:**

 $Pick-Up \longrightarrow Align \longrightarrow Needle point \longrightarrow Folding \longrightarrow Sew \longrightarrow Dispose$ 

#### **Work Station Layout**

Workstation layout in the garment industry refers to the arrangement of work areas, equipment, and materials within a production facility to optimize the workflow, reduce handling time, and improve overall efficiency. The design of a workstation layout significantly impacts the productivity, safety, and ergonomic conditions of workers, as well as the overall output of the production line<sup>4</sup>.

#### Work station Layout used in Garment Production:

- a. Straight line layout
- b. U-shaped layout
- c. Modular layout
- d. Parallel layout
- e. L-shaped layout

#### **Result and Conclusion**

After conducting a detailed Time Study and Method Study for optimizing garment production efficiency, the following key findings were observed:

a. <u>Reduction in Idle Time:</u> Identifying and eliminating unnecessary motions led to a 15-20% reduction in worker idle time.

b. <u>Improved Workflow Efficiency:</u> Proper workstation layout and streamlined processes improved workflow, reducing bottlenecks and delays.

c. <u>Standardization of Work</u>: Time study helped in setting Standard Minute Values (SMV), ensuring consistency in production output.

d. <u>Enhanced Productivity</u>: By optimizing sewing operations and material handling, overall productivity increased by 10-18%, depending on the operation.

e. <u>Reduction in Production Cost</u>: By minimizing wasted time and motion, labor and overhead costs were significantly reduced, leading to higher profitability.

f. <u>Worker Satisfaction and Ergonomics</u>: Improved workstation layouts and better working conditions resulted in less fatigue and higher efficiency among workers.

Optimizing garment production efficiency through time study and method study is essential for achieving higher productivity, cost-effectiveness, and better quality control. By analyzing and restructuring work methods, industries can reduce unnecessary movements, improve machine utilization, and streamline

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workflow. Implementing these techniques ensures faster production cycles, reduced labor costs, and increased worker efficiency, ultimately leading to a more profitable and sustainable garment manufacturing process.

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