



TITLE: A SIMULATION STUDY OF PRODUCTION PLANNING AND SCHEDULING IN A MANUFACTURING COMPANY

ANG HUI LENG PC13034

BACHELOR OF INDUSTRIAL TECHNOLOGY MANAGEMENT
FACULTY OF INDUSTRIAL MANAGEMENT
UNIVERSITI MALAYSIA PAHANG



ABSTRACT

Production planning and scheduling has become one of the most frequent problem that occur in a manufacturing company. Production planning is to determine the manufacturing plan, issued the information for its execution, record and collet the data so that all the plant can be controlled through all its stages while scheduling can be defined as allocation of resources over time to complete particular task. A production line of a common mode choke in an electronic company is developed by using discrete event simulation. The most critical problem in terms of production planning and scheduling is the production line required longer processing time and some process required skilful worker to accomplish it. Some strategies were recommended to the company by using what-if analysis to develop a simulated model in order to reduce waiting time for each process.

INTRODUCTION

Processing time of a production line is the key factor that affect the output performance for company. In this study, processing time of common mode choke production line is longer due to a longer distance between some workstations and the some process required skillful worker to accomplish it. Some workstations do not arrange in sequence and required time to transfer product between workstations. Therefore, the purpose of this study is to minimize the waiting time meanwhile reducing the processing time to improve output performance. Hence, waiting time per process will be measure as performance indicator.

OBJECTIVE/S

The current study aim to achieve the following objective:

- To develop a simulation model of production line of a manufacturing company.
- To recommend strategies to improve the production planning and scheduling of a manufacturing company.

METHODS

Data Collection Methods:

- Interview – Interview with engineer from electronic manufacturing company to understand the process flow in order to develop a simulation model.
- Observation – Collecting data by calculating processing time for each process during observation.

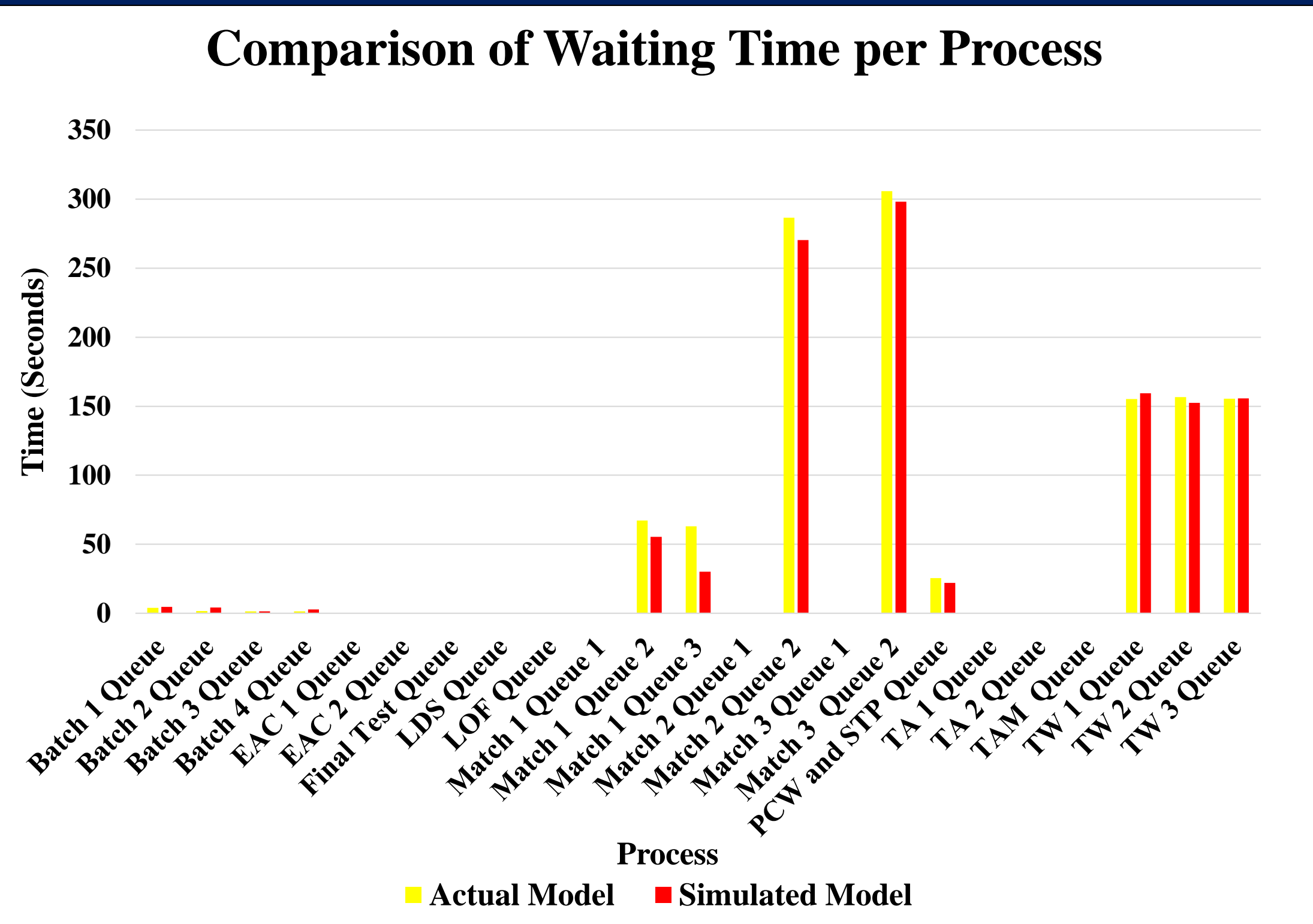
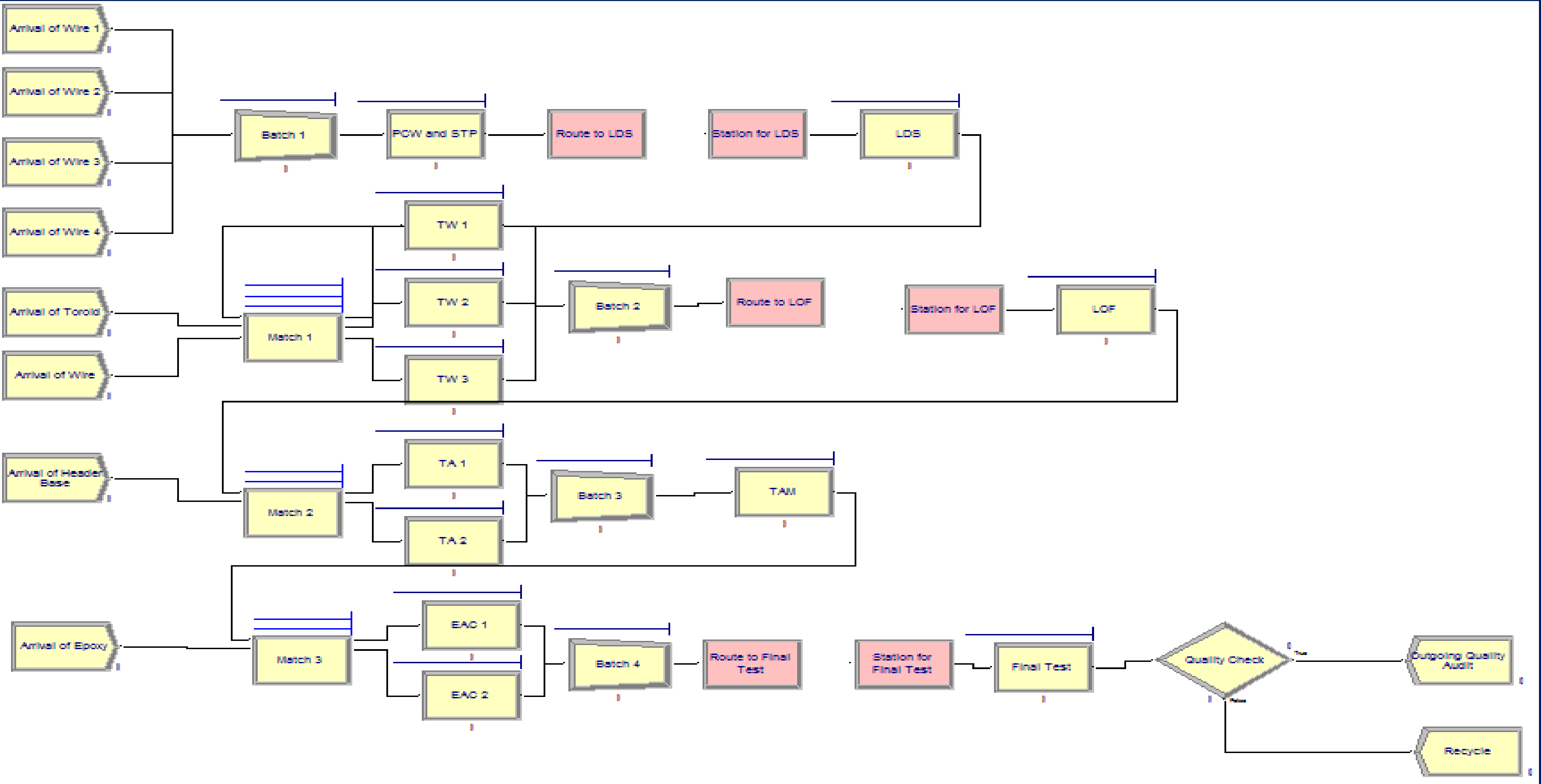
Discrete event simulation:

Arena software was used to develop a simulation model of actual process.

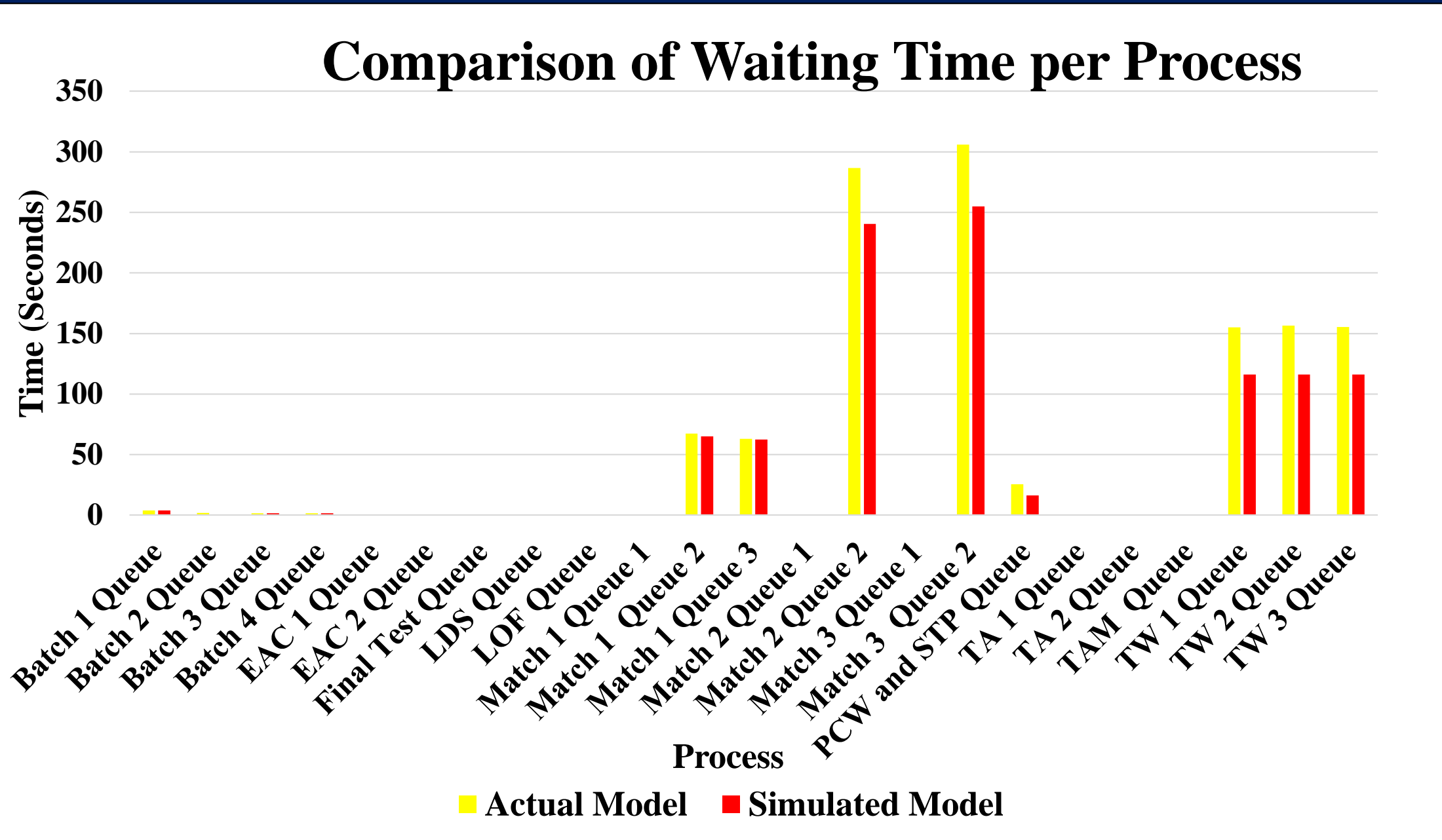
CONCLUSIONS AND RECOMMENDATION

The results showed that Scenario 3 is the best method among the other scenario in reducing waiting time and transfer time. It is suggests that arrange the production line in U-shaped could help to narrow down the distance between two workstations as well as improve its efficiency and increase the machine utilization. Providing training program semi-annually for workers to improve their skill and purchasing advanced machine to replace manual system would help to reduce the waiting time for each process.

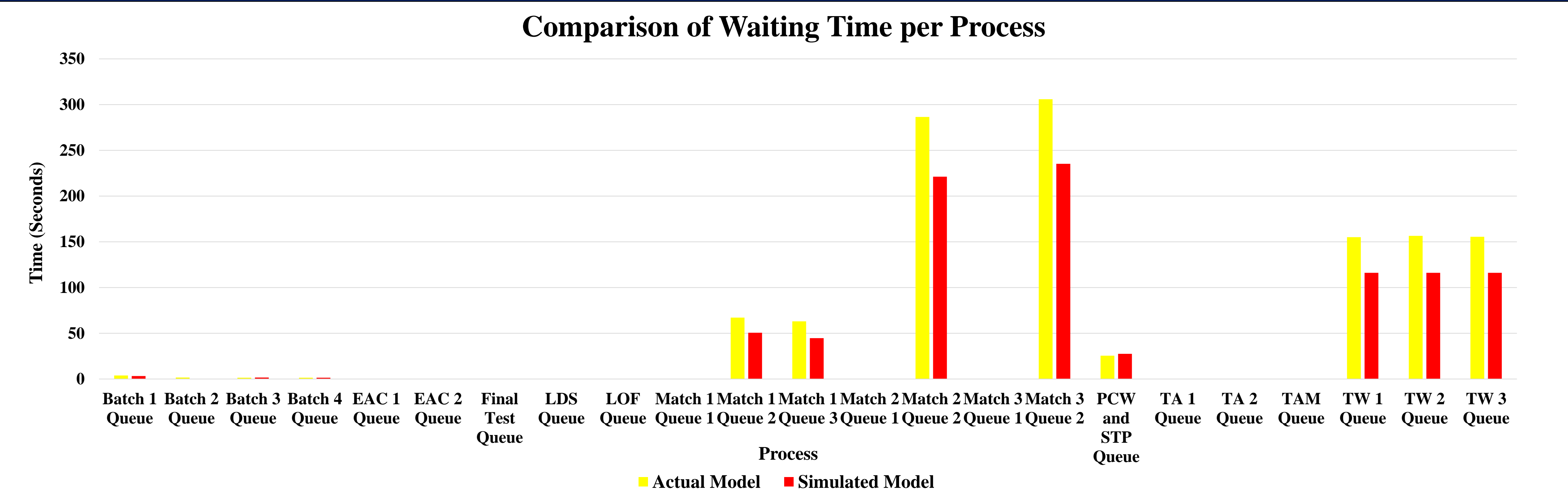
RESULTS



Scenario 1: What-if reducing the route time to 2 seconds by narrowing the distance between two workstations.



Scenario 2: What-if altering the delay type of toroid winding process from normal to constant, reducing the parameter value of toroid winding process to 40 seconds and removing the operator 4, 5 and 6 from toroid winding process.



Scenario 3: Combination of Scenario 1 and Scenario 2 which reduce distance between workstations and changing manual system to automatic system.

Scenario 1 and 2 reduce the waiting time slightly while scenario 3 shows a significant reduction on waiting time per process between actual model and simulated model. The output performance of common mode choke is 10 which is similar as the engineer from electronic manufacturing company said during the interview.