

IMPLEMENTATION OF COMPUTER SIMULATION IN RUBBER ASSEMBLY  
LINE: A CASE STUDY (RUBBER RESEARCH INSTITUTE OF MALAYSIA)

MOHD FAHMI BIN MOHAMAD AMRAN

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## Abstract

Simulation is one of the modeling techniques in solving industrial problem that can imitate the real system through model development. In Rubber Research Institute of Malaysia (RRIM), assembly line of Deproteinised Natural Rubber (DPNR) that has been operating since 1994 had never been modeled through simulation method in improving and solving the production problem. Therefore, the implementation of computer simulation in the DPNR assembly line at RRIM is appropriate to solve two main problems namely increasing production capacity, and ineffective production line. In order to achieve the objective, facilities layout, automating the process of assembly line and increase the conveyor speeds were proposed as a method to improve the current system. In this project, the simulation modeling was applied discrete event simulation and the flow manufacturing simulation as a methodology. The simulation model was developed and tested using *ProModel 6.0 Network Version* software. The data analysis was carried out using *Stat::Fit* of *ProModel* software. Data was collected and evaluated to determine the necessary parameters that are used in the simulation model. This project is wished to be implemented as solutions to the problem faced by the current system.

## Abstrak

Simulasi merupakan teknik pemodelan dalam menyelesaikan masalah industri yang dapat meniru sistem sebenar menerusi pembinaan sebuah model. Di Institut Penyelidikan Getah Malaysia (RRIM), baris pengeluaran bagi *Deproteinised Natural Rubber* (DPNR) yang telah mula beroperasi sejak tahun 1994 tidak pernah dimodelkan melalui kaedah simulasi yang dapat menyelesaikan masalah pengeluaran. Oleh itu, pengimplementasian komputer simulasi untuk baris pengeluaran bagi DPNR di RRIM adalah kaedah yang sesuai untuk menyelesaikan dua masalah utama iaitu peningkatan jumlah pengeluaran dan baris pengeluaran yang tidak efektif. Untuk mencapai objektif, *layout fasiliti*, pengautomasian proses baris pengeluaran dan meningkatkan kadar kelajuan konveyor telah dicadangkan sebagai kaedah dalam meningkatkan keupayaan sistem semasa. Dalam projek ini, pemodelan simulasi menggunakan *simulasi peristiwa diskrit* dan *simulasi pembuatan aliran* sebagai metodologi. Model simulasi dibangunkan dan diuji menggunakan perisian *ProModel 6.0 Network Version*. Analisa data pula menggunakan *Stat::Fit* yang terdapat dalam perisian *ProModel*. Data telah dikumpul dan dinilai untuk menentukan parameter yang digunakan dalam pemodelan simulasi. Adalah diharapkan semoga projek ini dapat digunakan untuk menyelesaikan masalah yang dihadapi sistem semasa.