

AUTOMATED PLATFORM FOR COMPONENT
SELECTION FOR DESIGNING MANUFACTURING
SYSTEM FACILITY

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**AUTOMATED PLATFORM FOR COMPONENT SELECTION FOR
DESIGNING MANUFACTURING SYSTEM FACILITY**

This report submitted in accordance with requirement of the Universiti Teknikal
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by

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.....
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ABSTRAK

Tujuan kajian ini adalah untuk membangunkan satu platform automatik untuk pemilihan komponen dalam bentuk kemudahan sistem pembuatan. Dalam mereka bentuk kemudahan sistem pembuatan, masa yang diambil dalam reka bentuk barisan pengeluaran umumnya sangat panjang. Salah satu sebab adalah kerana keperluan yang tinggi dan kompleks untuk mengenal pasti dan pemilihan komponen untuk sistem. Setiap sistem pembuatan biasanya mengalami beberapa fasa. Dalam fasa perancangan, pertimbangan harus diberikan kepada faktor-faktor kritikal seperti potensi pasaran bagi produk, reka bentuk, proses yang digunakan, kemudahan, peralatan dan bahan yang diperlukan untuk menghasilkan. Dalam fasa pelaksanaan, sumber yang ada dan dimasukkan ke dalam tempat supaya pengeluaran yang boleh bermula. Fasa pelaksanaan pergi dengan fasa kawalan, di mana sistem perlu dikawal atau diuruskan pada masa pelaksanaan dan semasa pengeluaran. Sistem mesti merangka, melaksana dan mengawal, secara amnya oleh pembuatan terlatih dan cekap dan pengurusan kakitangan. Dalam projek ini platform automatik akan diwujudkan dengan menggunakan CATIA untuk perpustakaan komponen dan mereka bentuk susun atur sistem dan perisian Visual Basic untuk antara muka pengguna grafik (GUI) dan pengaturcaraan. Platform dicipta dengan banyak komponen dan susunatur sistem boleh mengurangkan masa reka bentuk pengeluaran, ia juga mudah untuk memilih susun atur yang diperlukan.

ABSTRACT

The purpose of this study is to develop an automated platform for component selection in designing manufacturing system facility. In designing manufacturing system facilities, time taken in design a production line is generally very long. One of the reasons is due to the high and complex requirement for identification and selection of components for a system. Each manufacturing system usually experience several phases. During the planning phase, consideration must be provided to critical factors like the market potential for the product, the design, the process used, facilities, equipment and materials required to produce. In the implementation phase, the resources available and put into place so that production can begin. The implementation phase goes with the controlling phase, in that the system must be controlled or managed both at the time of its implementation and during production. The system must devise, execute and control, generally by well-trained and efficient manufacturing and personnel management. In this project automated platform will be created by using CATIA for component library and designing system layout and Visual Basic software for graphical user interface (GUI) and programming. The platform created with a lot of component and system layout can cut the time of the design of production line, it is also easy to choose layout needed.

DEDICATION

To my beloved parents, Ahmad Sofian Bin Mohd Salleh and Masitrah Binti Taib. To my supervisor, Mr. Muhamad Arfauz Bin A Rahman, lecturers and friend for thier help, support and friendship.

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CHAPTER 1

INTRODUCTION

1.1 Background

Automated manufacturing is the manufacturing method relies on the use of computerized control system to simplify the layout of equipment in which the product is produced. Development of a fully automated production system dates to the second half of the 20th century, and manufacturing techniques used in the scale of various facilities around the world.

Historically, manufacturing has been committed entirely by hand. This requires a large amount of labor, driving up the cost of the final product, and also expose workers to hazards. During the Industrial Revolution, manufacturing machinery introduced. In the manufacture of machinery, workers operate equipment that is not labor, instead work directly. This reduces costs, better consistency, and contribute to the development of workplace safety. Automated manufacturing is the next step in the process of refining and modernizing manufacturing. In a fully automated facility, no man on the floor. Automated equipment to do the job, as ordered by the control system. The system uses complex software that can schedule manufacturing tasks and run diagnostics on equipment that appears to malfunction.

Automated equipment can fabricate, install, and packaged products. Some systems even if the product package for full delivery of invoices and mailing labels, send the products directly from the line and into the truck for delivery. Levels of automation

depending on the product and the company's budget, such as auto manufacturing is expensive to implement even if it saves costs in the long term. Consulting firms can help companies to order, install, and customize the automated systems for manufacturing applications.

From a safety perspective, auto manufacturing is a significant improvement. If people only on the assembly line when it closed for work on equipment, the risk of workplace injuries decreased dramatically. Managing automated systems also need more training and skills and translate into higher wages for workers involved in the maintenance and management of the system. Automated manufacturing also eliminates jobs, however. This has been criticized in areas where employment rates are low and people will prefer dangerous manufacturing jobs unemployment.

When planning, execution and control phase has been safely and successfully implemented, it is necessary that staff follow up with continuous improvement, to meet emerging demands, and also to ensure that the company will stay in business for a long time. It is at this stage that many technical managers, as graduates of Manufacturing Systems, using their initiative to review and improve different areas of their manufacturing systems for continuous productivity and better. Right now using of automatic component selection are really needed to speed up the design of the manufacturing system facility. This paper addressing why it is necessary to improve manufacturing systems, and how different improvements can be achieved in different areas of the field.

1.2 Problem Statements

In designing manufacturing system facilities, time taken to design a production line is generally very long. One of the reasons is due to the higher concentration identification and selection of components for a system. This system will help manufacturers shorten the time required to complete the layout, the manufacturer can also find the components needed for a layout.

Each manufacturing system usually experience several phases. The system must devise, executed and controlled, generally by well-trained and efficient manufacturing and personnel management. During the planning phase, consideration must be provided to critical factors like the market potential for the product, the design, the process used, facilities, equipment and materials required to produce. In the implementation phase, the resources available and put into place so that production can begin. The implementation phase goes with the controlling phase, in that the system must be controlled or managed both at the time of its implementation and during production.

1.3 Objective

The aim of this project is to develop an automated platform for component selection for designing manufacturing system facility. In order to achieve the aim the following objective need to be fulfilled:

- i. To develop a component library for designing manufacturing system facility.
- ii. To develop the interface and software for automated component selection.
- iii. To provide the automation solution for system layout.

1.4 Scope

The project will only focus on furniture manufacturing system facility, which is to automate furniture manufacturing system facility layout selection. The system will be developed using Visual Basic and design of manufacturing system facility using Catia. As the result the system will show some of layout that already created and saved in this system.