

**UNIVERSITI TEKNOLOGI MARA**

**DESIGN AND FABRICATION OF AN  
AUTOMATIC FLOUR SIEVE  
MACHINE**

**MUHAMAD ARIS ISKANDAR BIN MAZLAN**

Dissertation submitted in partial fulfillment  
of the requirements for the degree of  
**Diploma**  
**(Mechanical Engineering)**

**College of Engineering**

**Feb 2023**

## **ABSTRACT**

In this global era, most people still use a manual flour sieve which is a colander when they are cooking or preparing a mixture for cakes. It takes a very long time to prepare a cake because they cannot multitask while preparing the mixture and more energy is needed in the making of it. Therefore, this project is designed for those who like to cook alone at home because it can save consumers time when cooking and baking cakes. Other than that, it also can reduce human energy consumption. The main mechanical engineering concept used in this project is the dynamic concept which contains rotational and linear motion. The crank and slider mechanism will be used to convert rotational motion to linear motion. When the motor is turned on, the horizontal rotational motion will be transferred to the vertical rotational motion by a bevel gear. Hence, simple wiring is needed to complete the project. Since this project used electrical and mechanical parts that can be harmful to the consumer, the mechanism will be housed within a cover to ensure its safety

## **ACKNOWLEDGEMENT**

Firstly, I wish to thank God for giving me the opportunity to embark on my diploma and for completing this long and challenging journey successfully. My gratitude and thanks go to my supervisor, Mr. Norhisyam Bin Jenal.

Finally, this dissertation is dedicated to my father and mother for the vision and determination to educate me. This piece of victory is dedicated to both of you. Alhamdulillah.

# TABLE OF CONTENTS

	<b>Page</b>
<b>CONFIRMATION BY SUPERVISOR</b>	<b>2</b>
<b>AUTHOR'S DECLARATION</b>	<b>3</b>
<b>ABSTRACT</b>	<b>4</b>
<b>ACKNOWLEDGEMENT</b>	<b>5</b>
<b>TABLE OF CONTENTS</b>	<b>6</b>
<b>LIST OF TABLES</b>	<b>8</b>
<b>LIST OF FIGURES</b>	<b>9</b>
<b>LIST OF ABBREVIATIONS</b>	<b>11</b>
<b>CHAPTER ONE : INTRODUCTION</b>	<b>12</b>
1.1 Background of Study	12
1.2 Problem Statement	12
1.3 Objectives	13
1.4 Scope of Study	13
1.5 Significance of Study	13
<b>CHAPTER TWO : LITERATURE REVIEW</b>	<b>15</b>
2.1 Benchmarking/Comparison with Available Products	15
2.2 Related Manufacturing Process	17
2.3 Sustainability/Ergonomic Related Items	18
2.4 Patent and Intellectual Properties	19
2.5 Summary of Literature	22
<b>CHAPTER THREE : METHODOLOGY</b>	<b>23</b>
3.1 Overall Process Flow	23
3.2 Detail Drawing	25
3.3 Engineering Calculation and Analysis	33
3.4 Bill of Materials	38

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of Study

Malaysia is known as a paradise of foods because of its multiracial society. It is normal for a Malaysian family to have a high tea in the evening with a variety of desserts which are from other races tradition. For example, kuih putu mayam, kuih pau and kuih seri muka. Normally, the housewives will prepare the foods for their family. However, nowadays most of them cannot spend so much time in the kitchen anymore. This is because, in the modern era women tend to be independent which make them want to have a job even though their husband has done enough for them. Therefore, a machine to help them prepare the foods is needed to ease their burden.

### 1.2 Problem Statement

From a survey that have been done in Figure 1.1, most common problem that consumers face is when they are sieving flour in the kitchen manually, the excess of flour will make a mess around the area. 27% of the 54 respondents faced cleanliness problem when they are using strainer. This will make them to do extra work to clean the mess and it could delay their other activities for that time. Other than that, 18.5% of them agree that the existing strainer is not meant to filter a lot of flour. The consumers must do a few times to get the exact amount of flour needed for cooking and baking since it requires a lot of amounts of flour. In addition, 13% of the respondents feel pain on their hand and 18.5% of them are unable to multitask during the process.