

UNIVERSITI TEKNOLOGI MARA

**DESIGN AND FABRICATION OF
DOUGH ROLLER MACHINE**

MUHAMMAD HAZIQ BIN MOHD ZAHIR

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

College of Engineering

Feb 2023

ABSTRACT

The Automatic Dough Roller Machine is an improvised version that adds some new features to increase the effectiveness of form and flatten dough. Most people use the manual rolling pin that will slow down the process of flattening dough for use as food. An upgraded dough roller that has a longer roller length will definitely make it easier to use for thoroughly get a clean and smooth surface of dough from the entire surface. This project is made from two rollers that are attached to gears. It uses electrical power that supplies power to the motor to move the gears. This makes use of previously mastered brazing, cutting, and welding techniques for the making the important parts of the project. The dough roller machine is used by simply inserting the dough between two rollers that will rotate and roll the dough in just one way. This project can definitely be marketed because small and medium industries must use dough roller machine to flatten the dough with a perfect thickness. The hope for this project to help the small and medium industries reduce the manpower and time consumption for flatten the dough.

ACKNOWLEDGEMENT

First and foremost, I want to express my gratitude to God for providing me the chance to pursue my diploma and for seeing me through this exhausting and difficult process of study. My thanks and appreciation are sent to my supervisor, Mr. Miqdad Bin Khairulmaini.

I want to express my gratitude to my supervisor, Mr. Miqdad Bin Khairulmaini for his tireless assistance and direction. Throughout the duration of the research project, he never stopped encouraging and always eager to help.

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

| | Page |
|---|--------------|
| CONFIRMATION BY SUPERVISOR | 3 |
| AUTHOR'S DECLARATION | 4 |
| ABSTRACT | 5 |
| ACKNOWLEDGEMENT | 6 |
| TABLE OF CONTENTS | 7 |
| LIST OF TABLES | 9 |
| LIST OF FIGURES | 10-11 |
| LIST OF ABBREVIATIONS | 12 |
| | |
| CHAPTER ONE : INTRODUCTION | 13 |
| 1.1 Background of Study | 13 |
| 1.2 Problem Statement | 14 |
| 1.3 Objectives | 14 |
| 1.4 Scope of Study | 15 |
| 1.5 Significance of Study | 15 |
| | |
| CHAPTER TWO : LITERATURE REVIEW | 16 |
| 2.1 Benchmarking/Comparison with Available Products | 16-18 |
| 2.2 Related Manufacturing Process | 19 |
| 2.3 Sustainability/Ergonomic Related Items | 19 |
| 2.4 Patent and Intellectual Properties | 20-21 |
| 2.5 Summary of Literature | 22 |
| | |
| CHAPTER THREE : METHODOLOGY | 23 |
| 3.1 Overall Process Flow | 23 |
| 3.2 Detail Drawing | 24-35 |
| 3.3 Engineering Calculation and Analysis | 36-38 |
| 3.4 Bill of Materials | 39-42 |

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

From past, people use a cylindrical tool for food preparation known as a rolling pin is used to form and flatten dough [1]. Two styles of rolling pin which has been created which are roller and rod. Roller type have a thick part in the middle and connect with small handles at each end. It can made of a variety of materials and the measurement around 3-4 inches in diameter. Rod type rolling pin is just a thin tapered batons and straight bottom. The rod typically made of wood around 1-2 inches in diameter. Most East Asian of French use roller-style and the Turkish Oklava use rod style.

Rolling pins are said to have been invented by the Etruscan civilization in ancient Italy about the year 800 BC. J. W. Reed created the rolling pin with handles attached to a central rod around the end of the nineteenth century. This invention is comparable to the equipment we use today and keeps chefs' hands off the rolling surface while they are shaping pastry [2]. These products were used to flatten dough and then it is ready to bake according to a predetermined temperature to make pizza or other food.

Making homemade cut-out sugar cookies or pie crust requires rolling out dough, which is what discourages many from doing so. Sure, it looks simple enough, all you have to do is roll the dough with a rolling pin back and forth until it reaches paper-thin consistency. The best work surface is marble because it keeps the dough cold and firm, preventing it from warming up and getting sticky. However, any flat countertop will suffice (such as a wooden table) [3].