



**UNIVERSITI TEKNOLOGI MARA**

**DEVELOPMENT OF A PROTOTYPE KITCHEN  
CUTTING EQUIPMENT MEMO DISSERTATION 2**

**MUKHRIZ BIN AZIZI**

Dissertation submitted in partial fulfilment of the  
requirements for the degree of

**Diploma**

**(Mechanical Engineering)**

**College of Engineering**

**Feb 2023**

## **TABLE OF CONTENTS**

	<b>Page</b>
<b>CONFIRMATION BY SUPERVISOR</b>	<b>1</b>
<b>AUTHOR'S DECLARATION</b>	<b>2</b>
<b>TABLE OF CONTENTS</b>	<b>3-4</b>
<b>LIST OF TABLES</b>	<b>5</b>
<b>LIST OF FIGURES</b>	<b>6</b>
<b>CHAPTER 3 : METHODOLOGY</b>	
3.0 Methodology	8
3.1 Overall Process Flow	9-12
Flow Chart Explanation	10-12
3.2 Detail Drawing	13-26
3 Drawings related to the project	13-16
Prototype Software Design	17-20
Material & Fabrication Processes	20-24
Summary of Decisions	24-26
3.3 Engineering Calculation and Analysis	27-28
3.4 Bill of Materials	
Bill of Materials	29
Cost Analysis for Materials	29
Justification on Material Selection	30-32
3.5 Fabrication Process	
Step by Step Processes	33-34
Safety Consideration	34-37
Final Prototype	38
3.6 Functionality of the Prototype	38-39

## **CHAPTER 4 : RESULT AND DISCUSSION**

4.1	Final Fabricated Prototype	
	Completeness of the Prototype	40-41
	Model Comparison	41-42
	Material Selection for the Prototype	43
	Final and Preliminary Design	43-44
4.2	User Manual	45
4.3	Advantages and Disadvantages of Prototype	46
4.4	Prototype Final Specification	47-48
4.5	Prototype Maintenance	49

## **CHAPTER 5 : CONCLUSION AND RECOMMENDATION**

5.1	Conclusion	50
5.2	Recommendation	50

<b>REFERENCES</b>	<b>51</b>
-------------------	-----------

<b>APPENDICES</b>	<b>52-55</b>
-------------------	--------------

## **CHAPTER 3**

### **METHODOLOGY**

#### **3.0 Methodology**

For this project kitchen cutting machine, there are a few research methods that are carried out to complete the methodology process of this project. Research methods in the form of experimental design, testing, apparatus, parameters, and engineering calculation are conducted. This part is crucial for the completion of this project because it shows every design sketching done for the project before deciding the final design. It is also to make sure every component of the project machine is made of the right materials. For testing, the project machine is tested by the application of engineering knowledge. Engineering calculations are also necessary to obtain important results that would help improve the machine even better. Another research method will be done by using the SolidWorks software where the final design will be constructed in the software, every component and every material used will be listed in the software. The exploded view and the assembly view will also be included to showcase every part of the project kitchen cutting machine more clearly.

#### **3.1 Overall Process Flow**

## **CHAPTER 5**

### **CONCLUSION AND RECOMMENDATION**

#### **5.1 Conclusion**

In conclusion, reflecting on the first objective of this final year project. This project prototype has become a mark on the innovation of kitchenware tools or equipment in general. The prototype had innovated kitchen equipment significantly in terms of portability, efficiency, and safety. This project prototype had also increased safety for all users at homes. This product is made to enhance safety especially when the item itself is left unattended. Therefore, children are away from the risks of injuries that may occur without safe kitchen tools.

#### **5.2 Recommendation**

As a future innovation in the works for the project, there is an idea that can be applied to further improve the project prototype in terms of technological advancement, product efficiency, and more safety measures. But as a recommendation to make the product even better is to install a motor which allows the slicing blade to operate automatically. Besides that, think of other project designs that could help boost the product.