

**UNIVERSITI TEKNOLOGI MARA**

**DEVELOPMENT OF A PROTOTYPE  
ENGINE 4 STROKE**

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## **ABSTRACT**

Nowadays, automation has altered the world as we know it. Engine 4-stroke is widely used in the industrial business. Engine 4-stroke has mostly been used by many cars. Nonetheless, we require an increasing number of automated systems to make more transportation for humans to travel a long distance without tiredness. Engine 4-stroke is highly demanded and the most important part of transportation industries. There are always engine 4-stroke that will be produced day by day and decade to decade. This assignment requires students to research the Engine 4-stroke and develop a new one to teach the people who do not know about the engine to learn about it by starting modeling in SolidWorks 2021. The Engine 4 stroke was created. It is hard to learn about engine 4-stroke with the real engine. So, making an engine 4-stroke model kit that is small, portable, and transparent helps a lot to teach the students. With the small and portable model, it is easier to carry to classes. The transparent cover can help students to look at how every part of the engine 4-stroke works such as the crankshaft, camshaft, timing belt, piston, and spark plug. The objective behind this project is to create a semi-automated engine 4-stroke kit for educational purposes. The process for fabrication involved cutting, drilling, and welding process. The benefit for society for this project is they can learn easily because it is transparent. Every part's function can be seen clearly.

## **ACKNOWLEDGEMENT**

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

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# TABLE OF CONTENTS

	Page
<b>CONFIRMATION BY SUPERVISOR</b>	<b>ii</b>
<b>AUTHOR'S DECLARATION</b>	<b>iii</b>
<b>ABSTRACT</b>	<b>iv</b>
<b>ACKNOWLEDGEMENT</b>	<b>v</b>
<b>TABLE OF CONTENTS</b>	<b>vi</b>
<b>LIST OF TABLES</b>	<b>viii</b>
<b>LIST OF FIGURES</b>	<b>ix</b>
<b>LIST OF ABBREVIATIONS</b>	<b>xi</b>
<b>CHAPTER ONE : INTRODUCTION</b>	<b>1</b>
1.1 Background of Study	1
1.2 Problem Statement	1
1.3 Objectives	2
1.4 Scope of Study	2
1.5 Significance of Study	2
<b>CHAPTER TWO : LITERATURE REVIEW</b>	<b>4</b>
2.1 Benchmarking/Comparison with Available Products	4
2.2 Review of Related Manufacturing Process	7
2.3 Patent and Intellectual Properties	13
2.4 Summary of Literature	16
<b>CHAPTER THREE : METHODOLOGY</b>	<b>20</b>
3.1 Overall Process Flow	20
3.2 Detail Drawing	23
3.3 Engineering Calculation and Analysis	28
3.4 Bill of Materials and Costing	30
3.5 Fabrication Process	32

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background of Study**

This project is to teach students how engine 4 stroke works. Engine 4 strokes that I make are to show the piston, camshaft, crankshaft, valves, and timing belt movements also spark plug makes ignition or what we call sparks. The piston movement I will use for moving is the motor. For the spark plug, I use LED light to pretend it to be the spark. From there, they can see the rotation of the engine block like the 4 strokes of the engine. The engine 4 stroke model that I will make is not too big and not too small just easy to bring everywhere like classes or workshops.

The target market is universities and schools that have automotive courses or for any kind of people like mechanics and who want to use the model engine 4 stroke for teaching and installing it. The demand for this project is maybe it will be high because this project is good for educational purposes. The project is automatic using a DC motor and no need to use a plug to get the power source, for the size is medium and easy to carry.

The engine 4 stroke has shown the piston and spark plugs. When I turn on the motor the piston will move like usual. The spark plug will make a spark follow the piston movement like how the engine works. It is portable because it is light and small, easy to carry anywhere. This project uses electrical supplies and batteries. Easy to find and very cheap to buy.

### **1.2 Problem Statement**

The problem that we face right now, is the student's hard understanding of how the engine 4-stroke works. It is because they cannot see through the engine. They cannot see every part of the engine in the engine block working such as the piston, crankshaft, camshaft, and timing belt. It is difficult to learn something that we cannot see with our bare eyes. The limited engine block for the lab is not enough to help students learn about engine 4-stroke working. Other than that, students do not pay so