

UNIVERSITI TEKNOLOGI MARA

**DESIGNING A PORTABLE TIRE
LIFTING SYSTEM FOR
EFFORTLESS TIRE REPLACEMENT
FOR ALL**

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DIPLOMA

Feb 2024

ABSTRACT

The purpose of this final year project is to help people during the tire replacement process. Manpower needed to carry the tire during the tire replacement process alone is insufficient. Age factors and health issues is also the reasons for this product to be accomplished. State-of-art SolidWorks 2021 will be used in designing a portable tire lifting system for effortless tire replacement for all. As a proof of concept, fabricating the designed portable tire lifting system should be achieved. Expected results from this portable tire lifting system may help users to lift up the tire with ease. By using this device, anyone will be able to replace the tire by themselves. Other than that, this portable tire lifting device is a prototype as a proof of concept to show the system will work. The final product should be detailed in all parameters and also design.

ACKNOWLEDGEMENT

Firstly, a big thanks to Almighty God for giving me the opportunity to embark on my diploma and the strength for completing this long and challenging journey successfully. I also would like to acknowledge and give my warmest thanks to my supervisor Sir Zeno Michael who made this work possible. His guidance and advice carried me through all the stages of my Final Year Project. It was a great privilege and honor to work and study under his guidance.

Next, I would like thank my friends for helping and supporting me through thick and thin. Your brilliant comments and suggestions made my project seems possible to achieve. I would also like to express my greatest gratitude towards my parents for their endless love, prayers, support and sacrifices. This would not have been possible without their unselfish love and support given to me at all times.

TABLE OF CONTENTS

	Page
CONFIRMATION BY SUPERVISOR	ii
AUTHOR’S DECLARATION	iii
ABSTRACT	iv
ACKNOWLEDGEMENT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS	xi
CHAPTER ONE: INTRODUCTION	1
1.1 Background of Study	1
1.2 Problem Statement	2
1.3 Objectives	2
1.4 Scope of Study	2
1.5 Significance of Study	3
CHAPTER TWO: LITERATURE REVIEW	4
2.1 Benchmarking/Comparison with Available Products	4
2.2 Review of Related Manufacturing Process	6
2.3 Patent and Intellectual Properties	7
2.4 Summary of Literature	8

CHAPTER ONE

INTRODUCTION

To assist mankind during the tire replacement process is the motive for this project to be conducted. This portable tire lifting system is not only good in lifting up the spare tires effortlessly but also useful for tire displacements from one place to another in a short period of time. The findings of this project will be used to develop the final product so it will be cost-efficient and ergonomically designed for all to use during the tire replacement process.

1.1 Background of Study

A vehicle is an important part of our lives because it gives us the freedom to commute anywhere we need to. In Malaysia, the number of vehicles are multiplying every year. The number of registered vehicles in Malaysia was reported at 17,728,482 unit in December 2021 [1]. We nowadays prefer to own cars because it is convenient, having the freedom to travel and saves time [2] [3].

Personal vehicles such as cars are particularly important due to the ever-increasing distances between our homes, workplaces, educational institutions and other leisure facilities. Inevitably, there will be times when complications arise unexpectedly such as when experiencing a flat tire on the road. Because of this issue, not everyone have the capability to replace the tire on their own.

This issue is known throughout the world and the common solution for this is using your feet to give a little lift to install the tires during the replacement process. This technique is not suitable for everyone due to the age factor and health issues. The use of this portable tire lifting system may help those with limited capabilities to effortlessly to lift up their tires, thereby reducing the manpower needed.

The focus of this project is to ease the tire replacement process and to require less manpower when handling this equipment. This project is also aimed to help people with limited capabilities or those with health issues such as back pains to lift up their