

UNIVERSITI TEKNOLOGI MARA

**DESIGN, ANALYSIS, AND
FABRICATION OF PORTABLE
TABLE SAW**

DZAFRAN AMANI BIN MUNIR

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

College of Engineering

March 2022

ABSTRACT

Based on my research , table saws are also known as a circular saw is a tool used for cutting wood and other materials too. It is popular for its versatility. Table are versatile saws mainly use for cutting cross and with the wood grain. They are most commonly used to rip. The tool has a very long history about 200 years. During that time, it has undergone several technological advancements and evolve untill the current and is more convenient than ever. The invention of the first circular saw happened in 1777. The invention of the circular saw was first credited to Samuel Miller, he created a metal disk with teeth around its edge and discovered that at fast speeds the disk was very adept at cutting. However, at that time, it did not use electricity and it was also not portable. However, my project is focused on portability and effectiveness of the machine. The portable saw features a central motor and auxiliary motor as the core of its engine. Although the primary purpose of the portable table saw is for light job site works, the engine is of standard in terms of stability during operation and how long it can perform without losing its efficiency.

ACKNOWLEDGEMENT

First of all, I would like to wish and thanks to God for the opportunity given to finish my diploma and also completing this long and challenging journey successfully.

Moreover, I have my gratitude and thanks to my supervisor, Ahmad Faidzal Khodori for all the guidelines in this Final Year Project assessment.

Last but not least, 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	ii
AUTHOR'S DECLARATION	iii
ABSTRACT	iv
ACKNOWLEDGEMENT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ABBREVIATIONS	x
CHAPTER ONE : INTRODUCTION	1
1.1 Background of Study	1
1.2 Problem Statement	1
1.3 Objectives	2
1.4 Scope of Work	2
1.5 Significance of Study	2
1.6 Expected Results	2
CHAPTER TWO : LITERATURE REVIEW	3
2.1 Information on existing product, patents, standards	3
2.2 Types of Wood and its hardness	6
CHAPTER THREE : METHODOLOGY	7
3.1 Introduction	7
3.2 Prototype Drawing and Bill Of Material, BOM	8
3.3 Calculation and Computational analysis	13
3.4 Fabrication Process	14
3.4.1 Equipment and Tools	14
3.4.2 Step by Step Fabrication Process	16
3.5 Final Fabricated Working Prototype	19

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

This project mainly involves designing and fabricating a portable table saw. The project design must be safe to use, can be use anywhere, affordable at a market price and also effective. This project consists a part of process, which are concept review, development, designing and fabrication. Furthermore, the fabrication process of this project is by using a motor as a power generator for the machine connected with timing pulley, belt, saw blade, and shaft. The point of the blade cutter is controlled by altering the sharp edge. This tool can be used for light cutting work.

The value of this project can be rated by its safety, effectiveness, and its affordability. Table saw are extremely a powerful machine, and the spinning of its blade are also very fast. So that safety should be one of the priorities of this project as the injuries that can be cause by this tool are very severe. First, the safeties of the tool itself and safety guide for the user. Next, the effectiveness of this tool is measured by the ability to cut various thickness of wood up to 14mm deep. Lastly, this tool is supposedly to be affordable and the priced will be standard as the market price or lower.

1.2 Problem Statement

Nowadays, a lot of existing product that available on the market is not so affordable especially for the people who is on the budget. So, I decide to fabricate a low budget portable table saw that is design for light work cutting especially for wood cutting. The material chosen for this project is purposedly to achieve this project objectives which is cheap, light, and portable.