

UNIVERSITI TEKNOLOGI MARA

**DEVELOPMENT OF A PROTOTYPE
MINIATURE SAW MACHINE**

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ABSTRACT

Nowadays, semi-automation has altered the world as we know it. Saw tools are widely used in the industrial business. Rods and pipes made of metal, wood, and plastic can be swiftly and effectively cut to the right size with saw tools. Nevertheless, to facilitate and expedite human labor, we need a growing number of semi-automated systems. Human saw cutting requires a lot of physical work and time. Exact and large-scale cutting is not feasible. We can therefore achieve excellent productivity and workpiece quality with a miniature saw machine. This assignment requires me to research the miniature saw machine and develop a new one with modern technology and the style of such machines using advanced SolidWorks 2021. The miniature saw machine that was created. Current products like jig saws have difficulty with straight cuts. It can be challenging to make straight cuts and a lot of vibration. Besides, current products like bandsaws are a big size and need a big space to store them. So, the researcher made a study to solve those problems by creating a miniature saw machine. The objective of this machine was to design a semi-automated miniature saw machine and to develop a miniature vertical saw machine for thin wood plates, cardboard, and plastic. The process involved completing this machine by welding, and drilling. Grinding and polishing. As a result, this product is 100% complete and 100% shows the functionality. It benefits students, home use, and the wood art industry because this machine is small size compared to other current products like bandsaws and is easy to handle and store.

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TABLE OF CONTENTS

CONFIRMATION BY SUPERVISOR	2
AUTHOR’S DECLARATION	3
ABSTRACT	4
ACKNOWLEDGEMENT	5
TABLE OF CONTENTS	6
LIST OF TABLES	8
LIST OF FIGURES	8
LIST OF ABBREVIATIONS	9
CHAPTER ONE: INTRODUCTION	10
1.1 Background of Study	10
1.2 Problem Statement	10
1.3 Objectives	11
1.4 Scope of Study	11
1.5 Significance of Study	11
CHAPTER TWO: LITERATURE REVIEW	12
2.1 Benchmarking/Comparison with Available Products	12
2.2 Review of Related Manufacturing Process	15
2.3 Patent and Intellectual Properties	18
2.4 Summary of Literature	21

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

A miniature saw machine is a mechanical machine that can cut materials such as wood and Perspex into shape. This machinery can be used for both manufacturing and art. It can make it easier for workers in manufacturing to easily cut small pieces of material, such as wood. It can also be utilized at home, for instance, if the parent wishes to use worn wood to make his house look more antique. This machine is compact, making it easy to store and helping to conserve room.

Because it is not intended for daily usage, but rather for wood cutting designs, this product has a low demand. Because most existing products utilize human labor, they have problems like vibration and are difficult for inexperienced users to use. An example of this is the jig saw. Other than that, some merchandise is broken and immobile. It is also quite large. So, storing it can be difficult.

The miniature saw machine uses using semi-automatic saw machine. It is simple to handle and store this product. Utilizing electricity, this product is human-friendly. Additionally, it is a safe product that can help prevent some risky situations.

1.2 Problem Statement

Current products like jig saw have difficulty with straight cuts It can be challenging to make straight cuts. This is because the blade tends to wander, especially when making long cuts. Current product has issues with vibrations which can generate significant vibrations, which can make it difficult to control the saw and may lead to less precise cuts. Another issue is limited cutting depth. Some products are typically not designed for cutting through thin materials. Cutting tools like coping saws can't cut the wood in a curve shape. Based on these problems, there is a need for a "Miniature saw machine". Because the material may be held in two hands and cut while using this cutting tool, it is anticipated that it would make straight cuts simple and reduce vibration. The tool can also be used to cut normal-sized and thin materials in curved shapes. Not enough space to store the machine also is one of the problems faced by users.