UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF HKS2Z - MINI AUTOMATIC HACKSAW

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

College of Engineering

FEB 2024

ABSTRACT

In the era of automation, where technological advancements redefine our daily operations, the use of hacksaws in industrial settings remains pivotal. This paper introduces a paradigm shift by proposing the creation of a mini automatic hacksaw, leveraging SolidWorks 2021 for design and subsequent fabrication. The primary objective is to streamline and automate the cutting process, enhancing efficiency and speed in handling metal, wood, and plastic rods and pipes. The fabrication process encompasses welding, drilling, cutting, wiring, and rigorous testing to ensure seamless functionality. The chosen material, an aluminum profile serving as the base, reflects a judicious selection for durability and performance. Results indicate that the designed mini automatic hacksaw successfully handles materials up to a maximum thickness of 3mm, specifically tailored for aluminum and wood. This project marks a significant advancement in blending traditional tools with modern automation, epitomized by SolidWorks 2021. The mini automatic hacksaw not only meets the specified objectives but also represents a proof of concept for integrating contemporary technology into the realm of hacksaw machinery. Through innovative design and fabrication, this endeavor exemplifies a stride towards enhancing industrial processes, showcasing the potential for future developments in automated cutting tools.

ACKNOWLEDGEMENT

Firstly, I wish to thank God for giving me the opportunity to embark on my diploma and for completing this long and challenging journey successfully. My gratitude and thanks go to my supervisor, Dr. Wan Muhammad Syahmi Bin Wan Fauzi for his cooperation in helping to make this project a success

Finally, 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.

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CHAPTER ONE
INTRODUCTION

1.1 Background of Study

These days automation has changed the world. Hacksaw's have a very wide usage in the manufacturing industry. As we know, there are many industrial applications where round bar or square bars are required to be operated on different machines to make machine components such as shafts, bolts, screws etc. This needs a greater number of pieces to be cut for mass production of those components. Motorized hacksaw cutting machine is basically a cutting device [1]. A hacksaw, as shown in Figure 1.1, is a fine –toothed saw, originally and principally for cutting metal [2]. Hacksaws are commonly used in metalworking and woodworking, as well as in plumbing and construction. They come in various sizes and configurations to suit different cutting needs, and are often used in conjunction with other cutting tools, such as drills or saws, to achieve precise cuts.

Figure 1.1 Conventional hacksaw [3]

The main reason I choose to invent this mini automatic hacksaw because to make the process of cutting metal easier and more efficient. It is because with manual cutting, operator hard to maintain the angle when cutting the metal and hard to ensure precise cuts because of to maintain the repeating consistent technique. In addition, when used regularly it can become heated and can cause the material to break down easily.