UNIVERSITI TEKNOLOGI MARA

DESIGN AND DEVELOPMENT OF MINI PNEUMATIC BENDING MACHINE

AHMAD NUR ARIFF ISMIE BIN MOHD RAUS

DIPLOMA

Feb 2024

UNIVERSITI TEKNOLOGI MARA

DESIGN AND DEVELOPMENT OF

MINI PNEUMATIC BENDING MACHINE

ABSTRACT

A mechanical tool or device known as a "bending machine" is used to bend or shape various materials, such as metal sheets, tubes, or profiles, into the necessary angles or curves. However, current bending machine that is being used is too high in cost causing a problem for the small scale industries to buy the bending machine. This is the reason why this project is fabricated which is to help the small scale industries to cut the cost on buying the bending machine for their workshops. It also come in a smaller size, so it perfects for a small workshops. Start design the project by using SolidWorks. The project is then fabricate by using various manufacturing process such as milling, drilling, turning and welding. This project apply the concept of pneumatic which is air powered mechanism. The significance of this project is it can helps reduce the cost of the bending machine. As a result, it can helps the small scale industry to cut the cost on buying bending machine for small scale project.

ACKNOWLEDGEMENT

Firstly, I would like to give my gratitude to all the people that have guided me to reach where I am today. My parents that guided and raised me, my friends that have supported me and my lecturer that have taught me painstakingly for me to succeed in my studies. Also, I would like to thank my supervisor, Madam Syidatul Akma as she has been very helpful throughout all this time. She has been with me for a long time since I started this diploma studies. She has taught me many things and now she also guided me to finish this Project.

Finally, this dissertation is dedicated to my father and mother for their hardwork to give me the educations that I need. This triumph is dedicated to the both of them.

CHAPTER ONE
INTRODUCTION

1.1 Background of Study

In mechanical industry, bending machine is used widely in our industries.A bending machine is a mechanical or hydraulic device used to bend or shape various materials, such as metal sheets, plates, tubes, profiles, or pipes.The machine applies force to the material, causing it to deform and form bends or curves according to a predetermined design or requirement.[1] For student of mechanical engineering in Malaysia, there are two types of bending machine that are widely use across the university which is manually operated and hydraulic operated. The bending machine that is used also big in size. The issues is that the cost for hydraulic operated bending machine is quite expensive, while the manually operated is harder to operate as it required more force to bend the material. They are also big in size which makes it hard to carry around to be shown to the students. Based on this issues, a new kind operated bending machine is designed. Eventhough there are a lot of attempt to solve this issues which is to cut the cost for the bending machine which is the quantity of the bending machine in the university is reduce, it still also cost a high amount of money. The reason is that the cost for even one hydraulic bending machine is high. This lead for making a new type of bending machine which is mini pneumatic bending machine. This is a better solution as pneumatic application doesn’t cost too high and the size of the machine is smaller in size which makes it easier to be carried around to be show to the student on how to use the bending machine. The aim of this study is that by using this type of bending machine, the university can cut cost on the bending machine. The lecturer can also demonstrate the way to use the bending machine to the students a lot easier.