UNIVERSITI TEKNOLOGI MARA

DESIGNING A TOOL-POST GRINDER

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ABSTRACT

This project is about designing and fabricating a tool-post grinder, without wasting too much cost on the making of it. Even though the existing tool-post grinders have a lot of advantages, the price is too pricey. Tool post grinders are commonly used for finishing the surfaces of workpieces, with a high level of precision and smoothness achievable. The tool post grinder fabricated on this project might not be as good as the expensive one, but it can still be used for surface finishing of workpiece. When conducting this project, machining processes such as welding, cutting, and grinding are going to be applied to fabricate the product.

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Finally, I dedicate this dissertation to both of my parents, for their support. All their sacrifice to make sure that I have the best environment to pursue my studies will be etched in my mind forever. May Allah SWT bless both of you with longevity and happiness.

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CHAPTER ONE
INTRODUCTION

1.1 Background of Study

The lathe machine, also known as “the mother of all machines”, is one of the oldest and most useful tools to mankind, and even these days, the lathe is still being used in machining processes. The lathe machine operates based on a very simple and understanding principle and as simple as it is, the machines have been used for thousands of years. The lathe contributes to constructing round surfaces such as wheels carriages, windmills, or pumps.

Even though this machine helps in lessening the burden of workers, the prices of the tools are quite expensive. Lathe tools such as the tool post grinder, which help with the surface finishing of products with proper limits, cost around $100 US dollars at the least. The cost of the product alone would make people rethink twice whether it is worth the money.

To avoid spending a lot of money, certain people would create their tool-post based on raw materials that can easily be obtained with the least money spent. Engineers who know the product might even use old scrap materials rather than buy a new one to reduce the wastage of materials.

This study aims to design a tool-post grinder, using all the DIY tool-post grinders existing as a reference. Through this project, the designing process will be conducted by using state-of-art SolidWork 2021. A prototype will be fabricated as a proof of concept when Final Year Project 2 is conducted in the next semester.

1.2 Problem Statement

The problems that lead to the conduction of this project are the first, the high cost of the tool-post grinder. The highest one can go based on the research so far is RM33,349, Dynabrade Electric Tool Post Grinder model and the lowest is around RM 7000, a Tool