

UNIVERSITI TEKNOLOGI MARA

**DESIGN, ANALYSIS AND
FABRICATION OF AUTOMATIC
KNIFE SHARPENER**

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ABSTRACT

Nowadays, the process of sharpening a knife can be hard and tiring to sharpen their knife to razor sharp knife. Currently, people are using the traditional method such as slicing the blade with the sharpener stone. This traditional method requires a cyclic movement of hand with the additional pressure. Due to this action, user constantly require a lot of energy. With the constant cyclic process sometimes led to an injury to the user. Apart from that, user also have the difficulties to determine whether the knife is sharp enough. Due to the problem mentions, the objective of this project is to tackle all the problem. This project will focus on a product that can ease the process, reduce the risk to injuries and able to make sure the knife is sharp enough from the sharpening process. In this project, data will be collected from the user and analyse. Data collected will be used to create the Product Design Spec (PDS). As for the method of choosing the conceptual design, I've used a Pugh chart to compare the concept designs created based on various criteria. Each design will be given a rate based on various criteria and the total points accumulated will show the best design for this project. From there on, the concept design chosen will be created in solidworks to be used as the final design. Later on, the solidwork analysis was used to undergo analysis on the final design to predict the product's real-world behaviour. Following this, was the most important part which is fabrication where the product manufacturing process happen. Lastly, the product that has fabricated must go through testing and make sure everything working supposedly. It is expected that the product would be sturdy and safe, and that it will assist the user efficiently in sharpening knives.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

A kitchen utensil is a small hand-held tool used for food preparation. Common kitchen tasks include cutting food items to size, heating food on an open fire or on a stove, baking, grinding, mixing, blending, and measuring; different utensils are made for each task. Some specialized utensils are used when an operation is to be repeated many times, or when the cook has limited dexterity or mobility. The number of utensils in a household kitchen varies with time and the style of cooking. Utensils involve in food preparation and this cutting meat is Knife. A tool with a cutting edge that or blade that often attached to a handle or hilt that is commonly used either in food preparation or as cutlery. Knife must be sharp for it to cut smoothly through the meat or any other food [1].

In my observation from my own experience in using knife, I Saw many people especially teenagers don't know how to use a traditional knife sharpener and ask the elder people to sharpen for them to continue cutting the meat. Other than that, I saw people that cut their finger when using the knife sharpener to sharpen their knife. It will not only disturb the process of cutting meat but it bothers people to continue cutting meat. Lastly, there are many people that can use the knife sharpener but they can't tell that their knife is sharp enough or not. By Cutting with a dull knife inevitably causes they had to push harder through the meat, which can lead to mistakes and injurie.

So, with my products which is automatic electrical knife sharpener it will solve every problem that users face when using current knife sharpener. All people can use the product without worrying about don't know how to use. With this product, it will greatly decrease the numbers of injury when using knife sharpener and lastly with every problem solved it will greatly increase productivity rate not just for chefs in restaurant but all home cooks that cook for their family in kitchen.