

UNIVERSITI TEKNOLOGI MARA

**DESIGN AND FABRICATION OF
AN INNOVATIVE 360 DEGREE
STANDING FAN**

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ABSTRACT

Fan is one of the significant engineering applications that has contribute to mankind in many ways. For example, oscillating fans are widely used in our life to aid air circulation throughout the surrounding. However, a standard standing fan moves back and forth and only throws air in a limited front area due to its oscillating mechanism. Due to this problem, many people are forced to spend and waste their money to buy another extra fan and place it side by side just to provide comfortable cool air from both fans for a whole space. Hence, to solve this problem, the project creates a standing fan that can rotate 360 degrees horizontally and is named as design and fabrication of an innovative 360-degree standing fan. The two main objectives of this product are to offer a fan that provides comfort in everyday life by ensuring the air from the fan can be supplied in all directions and to fabricate and design the product successfully. In order to fabricate this product, several methodologies have been used such as computational analysis and fabrication process. As a result, this product successfully rotates 360 degrees horizontally thus can be placed in the centre of the room or the area in order to deliver the air to the fullest potential. However, it is undeniable that there are advantages and limitations to this product. Despite the limitations, the objectives of the project are successfully achieved hence the 360-degree standing fan can produce cool and breeze air throughout the surrounding in all directions.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

The fan is one of the significant engineering applications that has contribute to mankind in many ways. Theoretically, fans produce a current of air that flows with high volume and low pressure. Since 17th century, various fan types had been invented and developed according to their purposes [1]. Typical applications include for personal comfort like an electrical fan, vehicle engine cooling systems, computer cooling systems, ventilation etc. As an introduction, oscillating fans are widely used in our life to aid air circulation throughout the surrounding. These electric fans can direct airflow from one side to another due to its oscillating mechanism. This allows the fan to cover more space with the breeze it produces compared to the ceiling fans that cover only a single direction or a single area with their wind. The main component for a fan is a blade, motor, oscillating gear, bearing and motor body. Fan blade has a special design that forces back side air to throw at the front side. Most fans are powered by electric motor, but other sources may be used such as hydraulic motor or internal combustion engine. An oscillating gear mechanism is used to create a back-and-forth motion. Bearing is the one that converts the rotary (mechanical) motion of shaft at the inner end into the stationary outer end with the guard. Last but not least, the motor body is an electric motor cover that is fixed on a fan stand. Its main purpose is to keep dust, smoke, and other impurities out of the motor. It consists of a motor, a motor shaft, and an oscillating mechanism, among other things [2].

Design and fabrication of an innovative 360-degree standing fan is a project that designs a standing fan that can rotate 360 degrees horizontally. A standard standing fan will be modified into three separated fan heads and these heads will be placed on a modified body that can rotate a complete 360-degree circle. This project has gone through several methodologies such as surveys, research, and observation. It is recommended that this fan be placed in the centre and provide air for the whole area especially during meetings. It is also suitable for open space programs such as marriage, parties, and much more.