



**BLADE DESIGN OF VERTICAL AXIS WIND TURBINE FOR
GOLF CAR BATTERY CHARGER**

MUHAMAD AZIZUL BIN MIJAN

(2008412818)

BACHELOR OF ENGINEERING (HONS) (ELECTRICAL)

FACULTY OF ELECTRICAL ENGINEERING

UNIVERSITY TEKNOLOGY MARA (UiTM)

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ABSTRACT

In this paper, the research has been done to design the blades for the small Vertical Axis Wind Turbine (VAWT) system. There are many factors to be studied to design the best blade including aerodynamic design or airfoil type, coefficient of drag, suitable number of blade in a system, size and chord length of a blade, rotational speed, torque and the output power that can be produced by the shaft. All design was drawn using CATIA software before simulated using Star CCM+ software. All of these characteristic will be studied to produce the blades that can capture as much as wind to generate high power and suitable with the application at golf car which is for battery charging. Finally, the conclusion are, the suitable NACA series is NACA 0018 and the best chord length is 50mm because can produce higher drag coefficient, thus the maximum power produced fro the blade is 6.90704 Watt.

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CHAPTER I

INTRODUCTION

1.1 Introduction

Power is one of interest in life for modern society today. Energy pervades all sectors of society, economics, labor, environment, international relations is in addition to our own livings e.g. personal housing, food, transportation, recreation and more. Power is produced rather than natural sources processed through a particular process so manifest power. Examples of energy sources which have long been used are petroleum, coal, solar and wind.

Because of many sources of energy from the earth is reducing, alternative has been implemented to replace this energy source to other sources are more fetish and will not run out. These new sources identified as renewable energy. Among renewable energy sources currently in use are solar, wind, hydro, bioenergy and thermal wave. These studies are again forwarded to allow renewable energy to supply sufficient power in one area, region, country or state.

1.2.1 Wind Energy

Wind energy is one of the energy that is being actively built. With high levels of acceptance of winds in most countries, the application wind to generate power more popular. There are also countries that still wind energy to wake this country although they have low levels of acceptance of wind. It is because; application of the use has been maximized. For example, wind turbine placed in the middle of the sea, the beach and also on moving vehicles. In Malaysia, wind speed is varied from season to