CHAPTER 1

INTRODUCTION

1.1 PROJECT BACKGROUND

Today domestic homes, schools, businesses and even any building on earth all have the potential to utilize solar power to provide on-site free electricity or at lease to reduce demand for energy from the usual main energetic sources such as fossil combustibles (petroleum and gas). According to market economy, the increasing worldwide demand for energy has continuously forces a rise on the price of fossil combustibles. In fact, the demand for energy is expected to grow faster than the finding out of new available fossil resources in the near future (Khan, N 2007).

The sun or solar energy had been identified as the most powerful energetic power source in our planet and it is expected that the sun will become the main electricity production source (WBGU (German Advisory Council on Global Change) 2003).

The solar energy distribution is more depended on the position of the panel and the sun location. Mostly a typical household solar photovoltaic system are fixed on the sloping roof or on the framework fixed to the ground but the sun always moving across the sky through the day from east to the west. Solar panels are usually set up to directly facing the sun at the middle of the day where the maximum solar energy can be emitted. Therefore morning and evening sunlight hits the panel at an acute angle reducing the total amount of heat which can be collected. Thus the developing of flexible solar panel is very important.
1.2 PROJECT PROBLEM STATEMENT

The solar energy had been identified as the most powerful energy source but yet not fully developed. Solar panel that had been used at most houses are having low efficiency and not convenience to be used as main energy source. Solar energy until today had only been used as secondary energy source to reduce or back up other energy source.

A specific location on the earth will always receive the maximum amount of solar energy when the sun’s energy hits the surface directly. The further the panel moves away from the equator the greater the angle of incidence and therefore the less solar energy. Thus, it is important for the solar panel to face directly to the sun at most of the time.

1.3 PROJECT OBJECTIVE

The primary objective of this project is to design and analyze the model of the manual sun tracking system. In order to achieve the primary objective, this project was added with other objectives. The objectives are as follow:

i. To design the manual sun tracking system using available material.
ii. To investigate the strength of the structure.

1.4 PROJECT SCOPE

The project is divided to two parts which is design and investigates the model of the manual sun tracking system. The design process is done by using SolidWorks software. In order to design, the model is divided to a few parts. The parts were not divided just for designing purpose but also to make it easier to analyze. To investigate the strength of the structure SimulationXpress and ALGOR FemPro is used.