FEASIBILITY STUDY AND SYSTEM DESIGN FOR SMALL SCALE INTEGRATED RENEWABLE ENERGY SUPPLY FOR UITM PENANG GUARD HOUSE EMPLOYING THE USE OF PV SOURCE

This project is presented in partial fulfillment for the award of the Bachelor of Electrical Engineering (Hons)

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ABSTRACT

A stand-alone Photovoltaic (PV) system is design to operate residential appliances such as fluorescent lights, ceiling fan, or even air conditioner. This paper presents two methods in determine the size of solar array and battery bank for stand alone PV system, there are (i) Conventional approach and (ii) Loss of power supply probability (LPSP) approach, under a given load at the UiTM Guard House. A computer program has been developed to size the system components (PV module and battery bank) in order to match the load at the site in most cost effective way. This paper also include propose of the type of installation of the PV system.

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CHAPTER 1

INTRODUCTION

The Sun is the greatest energy source: powerful, lasting, reliable and available all over the world. The Sun is a star, the nearest to Earth of 100 billion in our galaxy. In the Sun's core, nuclear fusion produces 386 billion megawatts of energy — enough in one second to meet energy needs on Earth for centuries to come.

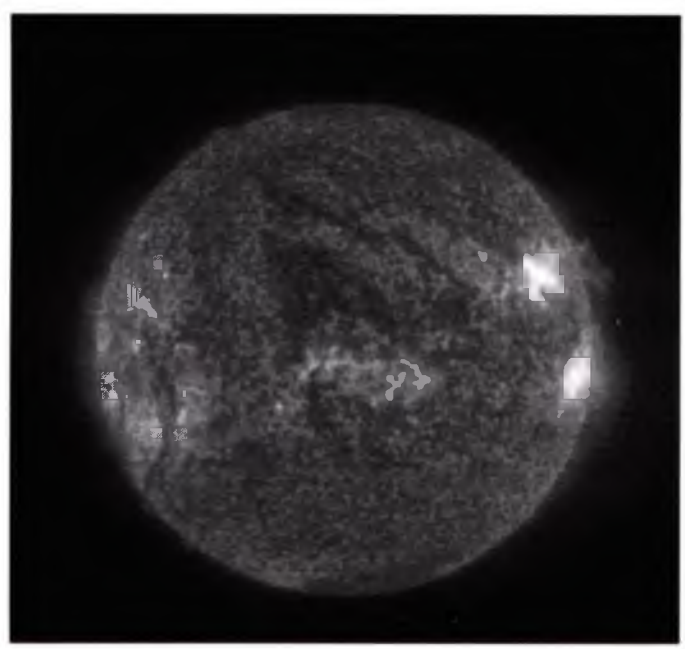

Figure 1-1: Sun the largest source energy of life

The Sun will shine for another five billion years, and it will outlast every finite energy resource we now consume. Currently, the usage of the Sun is only a fraction of the energy we receive in the form of heat and light.

Earth's atmosphere is a unique design for life. It transmits and reflects the Sun's energy to make plants grow and provide us with food and fuel. The transformation of solar energy in useful ways is a design process of vast scale. The