PHOTOVOLTAIC (PV) HYBRID SYSTEM USING HOMER

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FAIRUZ BIN WAHAB
FACULTY OF ELECTRICAL ENGINEERING
40450 SHAH ALAM, SELANGOR DARUL EHSAN
MALAYSIA
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FAIRUZ BIN WAHAB
Faculty Of Electrical Engineering
University Teknology Mara (Uitm)
Shah Alam, Selangor Darul Ehsan

ABSTRACT

This thesis presents Photovoltaic (PV) Hybrid System as a renewable energy for Sabah rural school and HOMER software is used to evaluate whether the system is suitable or not. Nowadays, renewable energy comes as one of energy source that really important for our life. Photovoltaic Hybrid System is one of the renewable energy that's very popular now. This system is really useful in rural area because of geographic condition. This project presents the design of a PV hybrid system using HOMER software. This case study will know whether the system is acceptable to supply the load and also can determine performance of each component that been combined. For this case study the loads are SEKOLAH KEBANGSAAN KAINGARAN, RANAU and the teacher's quarters are been choose.

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CHAPTER 1

INTRODUCTION

The human population of the earth has now passed 6 billion [1], and all of these inhabitants want the energy necessary to sustain their lives. Exactly how much energy is required to meet these needs and exactly what sources of energy will meet these needs will be questions to be addressed by the present and by future generations. One certainly, however, is that developing nation will be increasing their per capital energy used significantly. For example, in 1997, the People Republic of China was building electrical generating plants at the rate of 300 megawatts per week. These plants have been using relatively inexpensive, old, inefficient, cold-fired technology and provide electricity to predominantly inefficient end uses [2]. The potential consequences to the planet of continuation of this effort are profound. Before we proceed with the details of photovoltaic power system, a promising source of energy for the future, it is instructive to look at the current technical and economic energy picture. This look will enable the reader to better assess the contributions that engineers will need to make toward a sustainable energy future for the planet.

In the last few years, the interest in renewable energy for power generation has been increasing because of environmental issues and the depletion of fossil fuels. The huge technological improvements for photovoltaic cells (PV) along with their decreasing cost seem to justify their use as a possible solution [3]. Photovoltaic systems are solar energy supply systems, which either supply power directly to electrical equipment or feed energy into the public electricity grid [4].

Sometimes PV modules are not economical or practical to provide all energy. It is because when loads are relatively constant during summer or if winter peak sun is very low, it may take a large number of modules to meet requirements. In such cases, it may be more economical to provide some of the system energy needs by another means, such as a diesel generator. A system that uses PV for part of its energy production and other means for the balance of the production is called a hybrid system [5]. A conceptual