DEVELOPMENT OF PV OUTPUT POWER INDICATOR USING PIC FOR BATTERY CHARGING SYSTEM

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FARAH FATIN BINTI ZULKIFLI
FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
MALAYSIA (UITM)
40450 SHAH ALAM
SELANGOR DARUL EHSAN

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ABSTRACT

Development of Photovoltaic (PV) output power indicator using Programmable Interface Controller (PIC) for battery charging system is one of the improvements in the photovoltaic monitoring system. This project was inspired by the problem of measuring power manually which need quite some time to get the output. By this project, output power of battery charger would be displayed on the Liquid Crystal Display (LCD). PIC is use to program the LCD. First of all, student have to understand basic concepts of each elements involved in photovoltaic system such as PV module, charge controller and battery charger. Current sensor ACS 712 is use to detect current while voltage divider is use to step down the voltage of battery charger. Student need to research on how to match output of sensor as an input of PIC. Then, program was designed to indicate power by using C programming.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Recently, global warming is a burning issue as the CO2 density increased highly in the atmosphere. Therefore, clean and renewable energy sources must be introduced to reduce the CO2 density. Among various renewable energy systems, Photovoltaic (PV) system is expected to play a promising role as a clean power electricity source in meeting future electricity demands. However, the power output of PV system fluctuates depending on weather conditions, season, and geographic location. It plays the match role in internal resistance and external load impedance of PV battery.

PV is the direct conversion of sunlight to electricity by solar cells. When photons of sunlight are absorbed in solar cells, the photons free electrons from the cell's atoms, creating a voltage potential. This is known as the PV effect. This is possible because various elements, added to the cell materials, establish an electrical field that causes electrons to move in one direction. Connecting wires to the two sides of a cell and to a load allows an electrical current to flow, just as with a battery. A 100-square-foot (9.3-square-meter) PV system will generate a peak power of about 1 kW, energy enough to meet many power requirements of an average home.[1]