

**RANCANG BANGUN *SOLARTRACKER*
BERBASIS MIKROKONTROLER ATMEGA8535
DENGAN SENSOR LDR DAN PENAMPIL LCD**

ABSTRAK

Telah dilakukan perancangan *solar tracker* menggunakan empat buah sensor LDR untuk mengindera arah gerak matahari. *Solar tracker* digunakan untuk menggerakkan sel surya agar mengikuti arah gerak matahari. Rangkaian elektronik terdiri dari rangkaian catudaya, rangkaian mikrokontroler ATmega8535 dan LCD, rangkaian *driver* motor stepper dan rangkaian sensor LDR. Rancangan mekanik menggunakan dua sumbu putar dengan motor stepper tipe unipolar sebagai penggerak agar sel surya dapat mengikuti gerak semu harian matahari (dalam arah timur-barat) dan gerak semu tahunan matahari (dalam arah utara-selatan). Sel surya yang digunakan adalah Amorphous 10 V/30 mA. Hasil pengukuran menunjukkan kenaikan tegangan mencapai 11,53% dibandingkan yang tidak menggunakan *solar tracker* dengan tegangan maksimum 11,57 V.

Kata Kunci : LDR, Sel Surya, *solar tracker*, mikrokontroler ATmega8535, LCD

**DESIGN AND DEVELOPMENT OF A SOLAR TRACKER
BASED ON MICROCONTROLLER ATMEGA8535
USING LDR SENSOR AND LCD DISPLAY**

ABSTRACT

This research aims to design a solar tracker using a four-quadrant LDR that used for sensing the position of the sun. Solar tracker is the tools used to follow the direction of motion of the sun. The electronic circuits consisting of a power supply circuit, microcontroller ATmega8535 and LCD circuit, stepper motor driver circuit and LDR sensor circuit. The mechanical design using dual axis with stepper motor as an actuator to position the solar cell tilted appropriately to face the sun directly at all times by tracking daily apparent motion of the sun (east-west motion) and yearly apparent motion of the sun (north-south motion). Solar cell that used is amorphous 10V 30mA. The result indicate the solar tracker has voltage surplus up to 11.53 % with maximum voltage of 11,57 V.

Keywords : LDR, Solar cell, solar tracker, microcontroller Atmega8535, LCD