

CONSTRUCTION AND DESIGN OF AUTOMATIC DUAL AXIS SOLAR TRACKER

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We will rise up, we will shine, Sonargaon University, Dhaka
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This project report is submitted to the Department Of Mechanical Engineering, Sonargaon University, Dhaka for partial fulfillment of the requirements for the degree of Bachelor of Science In Mechanical Engineering.

DECLARATION

This is to clarify that the research study entitled, “**Automatic Solar Tracker in Dual Axis**” is carried out by some students below their name under my supervision in the **Department of Mechanical Engineering of Sonargaon University**. This above thesis work or any part of this work has not been submitted anywhere for that ward of any University.

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Dedicated to

Our Parents

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ABSTRACT

Because of the high demand for green and sustainable energy, research on solar energy harvesting has become one of the most popular engineering research topics, particularly on renewable energy. Many research studies are devoted to the design and development of efficient and dependable solar power systems. Solar tracking and control have become one of the most important components of a solar power system for improving and optimizing the efficiency of solar energy absorption.

This project's goal is to evaluate the performance of a dual-axis solar tracking system. It is made up of three major structures: the inputs, the controller, and the output. The LDRS provides input, the Arduino serves as the controller, and the servo motor serves as the output.

The main controller in this project, the Arduino, receives analog input from LDRs and converts it to a digital signal using an analog-to-digital (A- D) converter. The controller then sends the signal to the servo motor to determine the position of the solar panel.

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LIST OF ABBREVIATIONS

| | |
|------------------|------------------------------------|
| IDE | Integrated Development Environment |
| LDR | Light Dependent Resistor |
| USB | Universal Serial Bus |
| PWM | Pulse width modulation |
| MHz | Megahertz |
| CPU | Central Processing Unit |
| RAM | Random Access Memory |
| ROM | Read Only Memory |
| PROM | Programmable Read Only Memory |
| EPROM | Erasable PROM |
| EEPROM | Electrically Erasable PRO |
| LED | Light Emitting Diode |
| LCD | Liquid Crystal Display |
| PDU _s | Power Distribution Units |
| USB | Universal Serial Bus |
| AC | Alternating Current |
| DC | Direct Current |
| PV | Photovoltaics |

LIST OF SYMBOLS

| | |
|---------------|-------------|
| μF | Micro Farad |
| V | Voltage |
| I | Current |
| η | Efficiency |