Department of Electrical and Computer Engineering

North South University

Senior Design Project

Sun Tracking Solar Powered Greenhouse Monitoring System

Raisa Karim Rashna	**1813482643**
Amantul Kaium Oishi	**2012130043**
Afrin Nahar	**1821850043**

Faculty Advisor:

Dr. K.M.A Salam

Professor

Department of Electrical and Computer Engineering

North South University

Summer, 2023

LETTER OF TRANSMITTAL

December 2023

To

Dr. Rajesh Palit
Chairman,
Department of Electrical and Computer Engineering
North South University, Dhaka

Subject: Submission of Capstone Project Report on "Sun Tracking Solar Powered Greenhouse Monitoring System"

Dear Sir,

With due respect, we would like to submit our **Capstone Project Report** on **"Sun Tracking Solar Powered Greenhouse Monitoring System"** as a part of our BSc program. The report deals with Multi Level Based Greenhouse Monitoring System powered by Sun Tracking Solar Energy. This endeavor held significant importance for us, providing valuable hands-on experience that we could directly apply to real-world situations. We exerted our utmost effort to fulfill all the necessary aspects outlined in this report with maximum proficiency.

We will be highly obliged if you kindly receive this report and provide your valuable judgment. It would be our immense pleasure if you found this report useful and informative to have an apparentperspective on the issue.

Sincerely Yours,

.....

Raisa Karim Rashna
Department of Electrical and Computer Engineering
North South University, Bangladesh

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Amantul Kaium Oishi
Department of Electrical and Computer Engineering
North South University, Bangladesh

.....

Afrin Nahar
Department of Electrical and Computer Engineering
North South University, Bangladesh

APPROVAL

Raisa Karim (ID # 1813482643), Amantul Kaium Oishi (ID # 2012130043) and Afrin Nahar (ID # 1821850043) from Electrical and Computer Engineering Department of North South University, have worked on the Senior Design Project titled "Sun Tracking Solar Powered Greenhouse Monitoring System" under the supervision of Dr. K.M.A Salam partial fulfillment of the requirement for the degree of Bachelor of Science in Electrical and Electronics Engineering has been accepted as satisfactory.

Supervisor's Signature

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Dr. K.M.A. Salam
Professor
Department of Electrical and Computer Engineering
North South University
Dhaka, Bangladesh.

Chairman's Signature

…….

Dr. Rajesh Palit
Professor
Department of Electrical and Computer Engineering
North South University
Dhaka, Bangladesh.

DECLARATION

This is to declare that this project is our original work. No part of this work has been submitted elsewhere partially or fully for the award of any other degree or diploma. All project-related information will remain confidential and shall not be disclosed without the formal consent of the project supervisor. Relevant previous works presented in this report have been properly acknowledged and cited. The plagiarism policy, as stated by the supervisor, has been maintained.

Students' names & Signatures

1. Raisa Karim Rashna

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2. Amantul Kaium Oishi

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3. Afrin Nahar

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Furthermore, the authors would like to thank the Department of Electrical and Computer Engineering, North South University, Bangladesh for facilitating the research. The authors would also like to thanktheir loved ones for their countless sacrifices and continual support.

ABSTRACT

In the domain of modern agriculture where automated greenhouse systems are increasingly common, solar panels exhibit a highly effective means of employing renewable energy. Our project has focused on augmenting the efficiency of solar energy utilization in these greenhouses. To engineer this, we have implemented sun-tracking solar panels. These panels actively align themselves with the sun's position throughout the day which maximizes their exposure to sunlight and, therefore, the amount of energy they convert.

The tracking procedure of these panels is facilitated by servo motors and Light Dependent Resistors (LDRs). LDRs are responsive to light intensity; they determine the direction of the strongest light source - in this case, the sun - and consequently signal the servo motors to adjust the panels. Significantly increasing their efficacy in contrast to static panels, this effective positioning ensures that the panels are always optimally angled towards the sun.

Further integrating technology into our automated greenhouse system, we have incorporated three specific sensors: a temperature sensor, a soil moisture sensor, and an LDR. Each sensor plays a crucial role in perpetuating the ideal growing environment within the greenhouse