Department of Electrical and Computer Engineering

North South University

Senior Design Project

EEE 499; Section 1

Group 5

Underground Water Reservoir Pump Control Module

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Faculty Advisor:

Dr. K. M. A. Salam

Professor

Department of Electrical and Computer Engineering

Fall 2020

DECLARATION

This is to certify 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. Any material reproduced in this project has been properly acknowledged.

Students' names & Signatures

1. Gazi M Najmus Sakib

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2. MD.Anik Hasan

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3. MD Belal Uddin

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APPROVAL

We, **Gazi M Najmus Sakib (1331347643), MD.Anik Hasan (1331042043)** and **MD Belal Uddin (1430878643)**, members of EEE: 499 (Senior Design) from the Electrical and Computer Engineering department of **North South University**; have worked on the project titled **"Underground Water Reservoir Pump Control Module"** under the supervision of Dr. K. M. A. Salam as a partial fulfillment of the requirement for the degree of Bachelors of Science in Electrical & Electronic Engineering and has been accepted as satisfactory.

Supervisor's Signature

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Dr. K. M. A. Salam
Professor

Department of Electrical & Computer Engineering

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Dhaka, Bangladesh.

Chairman's Signature

.....

Dr. Rezaul Bari
Associate Professor & Chairman

Department of Electrical & Computer Engineering

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ACKNOWLEDGEMENT

By mercy of the Almighty we have completed our senior design capstone project entitled "**Underground Water Reservoir Pump Control Module**". Foremost, we would like to express our sincere gratitude to our advisor Dr. K. M. A. Salam for his continuous support in our capstone project progress throughout the whole 499A and 499B, for his patience, motivation, enthusiasm, and immense knowledge. His guidance helped us in all the time of research, writing and completing of this project.

Our sincere thanks also goes to North South University, Dhaka, Bangladesh for providing an opportunity in our curriculum which enabled us to have an industrial level experience as part of our academics.

Last but not the least, we would like to thank our family as their inspiration and guidance kept us focused and motivated.

Abstract

Water is one of the basic daily commodities every human needs to survive. Though 4/3rd of the Earth surface contains water, drinkable water is not available to use that easily. In mainland water is sourced from deep underground sources and rivers by government, which then goes through filtering and treatment processes, and finally fed to the industries and houses through feeding pipe network. In modern cities this water supply is completely taken care by the govt. but in some backward cities or unplanned zones, the citizens need to put their own effort as well. If we talk about our city Dhaka, WASA takes care of the water supply. Their feed network has continuous stable water supply with perfect pressure which fills the residential underground tanks without any human effort. But in some areas, water supply is not stable and the house owners need to use their own pump to pull the water with additional force from the supply line. This extra effort creates a number of problems which we are going to solve with our project

This project operates a pump's turn on and off action based on several external conditions. These conditions are measured using several sensors like tank water level, supply water availability, supply water quality and pressure. The heart of the device is Arduino UNO which uses ATmega328P microcontroller which measures all the sensor data and provides output to the pump operating relay according to the program inserted. A major specification is that, this device can be run all by itself as well as can be operated remotely by the user far away from the home with the help of GSM connectivity. The design is implemented using locally available parts and tools, the goal and cost of the device was set according to the general user's necessity and cost ability. If successful, this device will make a lot of house owner's life easy and hassle free, also will increase the efficiency of water and electricity usage due to reduction of waste.