FINAL REPORT

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POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

SOIL MOISTURE SENSOR

RAJASRI A/P RAVI CHANDRAN **08DEP19F2005**

JABATAN KEJURUTERAAN ELEKTRIK

SESI 2021/2022

SOIL MOISTURE SENSOR

RAJASRI A/P RAVI CHANDRAN **08DEP19F2005**

This report submitted to the Electrical Engineering Department in fulfillment of the requirement for a Diploma in Electrical Engineering

JABATAN KEJURUTERAAN ELEKTRIK

SESI 2021/2022

CONFIRMATION OF THE PROJECT

The project report titled "Soil Moisture Sensor" has been submitted, reviewed and verified as a fulfills the conditions and requirements of the Project Writing as stipulated

Checked by:

Supervisor's name :

Supervisor's signature:

Date :

Verified by:

Project Coordinator name :

Signature of Coordinator :

Date :

"I acknowledge this work is my own work except the excerpts I have already explained to our source"

1. Signature :

Name : RAJASRI A/P RAVI CHANDRAN

Registration Number : 08DEP19F2005

Date :17/01/2022

DECLARATION OF ORIGINALITY AND OWNERSHIP

TITLE : SOIL MOISTURE SENSOR

SESSION: SESI 1 2021/2022

1. I, **RAJASRI A/P RAVI CHANDRAN (IC NO: 0111211-05-0256)** is a final year student of **Diploma in Electrical Engineering, Department of Electrical, Politeknik Sultan Salahuddin Abdul AzizShah**, which is located at **Persiaran Usahawan, 40150 Shah Alam, Selangor**. (Hereinafter referred to as 'the Polytechnic').

2. I acknowledge that 'The Project above' and the intellectual property therein is the result of our original creation /creations without taking or impersonating any intellectual property from the other parties.

3. I agree to release the 'Project' intellectual property to 'The Polytechnics' to meet the requirements for awarding the **Diploma in Electrical Engineering** to me.

Made and in truth that is recognized by;

a) RAJASRI A/P RAVI CHANDRAN (Identification card No: - 011211-05-0256)) .
.....
) RAJASRI A/P RAVI CHANDRAN

In front of me, PN. NUR HADIANA BT NASUDDIN
As a project supervisor, on the date:) .....
) PN. NUR HADIANA BT NASUDDIN

ACKNOWLEDGEMENTS

I have taken efforts in this Project. However, it would not have been possible without the kind support and help of many individuals and organizations. I would like to extend my sincere thanks to all of them. I am highly indebted to my supervisor, Puan Nur Hadiana binti Nasruddin for their guidance and constant supervision as well as for providing necessary information regarding the Project & also for their support in completing the Project.

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My thanks and appreciations also go to my classmates in developing the Project and people who have willingly helped me out with their abilities.

ABSTRACT

Soil Moisture Sensor is the name of this project. This product is used to determine the moisture content of the soil. Some people working in agriculture are having trouble keeping track of their soil moisture levels. A soil moisture sensor is not affordable to everyone in the agriculture industry because it is expensive and the sensor's component cannot be replaced if it breaks. The goal of this innovation is to make it easier for farmers and gardeners to keep track of their soil moisture levels. To thrive, all plants require a precise degree of soil moisture. It's crucial to keep an eye on the soil moisture level because it has an impact on plant growth. This product is inexpensive, and the parts are easily replaceable.

ABSTRAK

Soil Moisture Sensor adalah nama projek ini. Produk ini digunakan untuk menentukan kandungan kelembapan tanah. Sebilangan orang yang bekerja di pertanian menghadapi masalah untuk mengetahui tahap kelembapan tanah mereka. Sensor kelembapan tanah tidak mampu dimiliki oleh semua orang dalam industri pertanian kerana ia mahal dan komponen sensor tidak dapat diganti jika pecah. Matlamat inovasi ini adalah untuk memudahkan petani dan tukang kebun mengikuti tahap kelembapan tanah mereka. Untuk berkembang maju, semua tanaman memerlukan tahap kelembapan tanah yang tepat. Sangat penting untuk mengawasi tahap kelembapan tanah kerana ia memberi kesan kepada pertumbuhan tanaman. Produk ini murah, dan bahagiannya mudah diganti.

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CHAPTER 1

1 INTRODUCTION

1.1 Introduction

Create a system that can track soil conditions and make recommendations to users on how to improve them. The soil moisture, surrounding water condition, temperature, and humidity of the area can all be measured and used to monitor soil conditions. This information is then transferred to a web server to be processed and calculated in order to decide the best course of action. The calculated result and advice are then delivered to the user through the internet, where they can view them via a smartphone app (Blynk).

1.2 Background Research

The goal of the project is to create a Soil Moisture Sensor that can accurately measure the moisture level and monitor the temperature of the plant. Because certain plants do not require much water, it is possible that they were not watered. This is also a good way to monitor the soil conditions, which can help a plant grow more quickly. It could help with water usage and waste management.

1.3 Problem Statement

The old agricultural system is no longer adequate to meet present and future demands. As a result, a new plant system that stimulates plants to grow swiftly and healthily is urgently needed. This system should be able to meet rapidly expanding demand while using as few natural resources as possible.

a. Most of soil moisture sensors are expensive.
b. Create a dependable and valuable alternative system.

1.4 Research Objectives

Soil moisture sensors is to measure the volumetric water content in soil. There are three main objectives as main goals in carrying out this project are:-

1. To create a more convenient way to water our plant than the traditional method.
2. To save more time to water our plant only take 3-5 seconds to open the application and start watering using our smartphone.
3. To receive information from Blynk Application on soil condition whether the plants need to be watered.

1.5 Scope of Research

1. This project will be using soil moisture sensor that will be put at the plant. The application (Blynk) will be used to start watering using Solenoid water valve.
2. For software component, the project will be using Arduino IDE and Proteus software.
3. For the hardware component, this project will be using Node MCU ESP8266, Relay Module, Soil moisture sensor and Solenoid water valve.

1.6 Project Significance

This project is primarily aimed towards farmers and plant enthusiasts. This Soil Moisture Sensor can save time for both lecturers and students. Furthermore, the proposed system is an embedded system that will measure a plant's moisture level with minimal human involvement. This can be used in a variety of settings, including the home, the farm, the orchard, the garden, and even the office.

1.7 Chapter Summary

The soil moisture sensor, surrounding water condition, temperature, and humidity of the area can all be measured and used to monitor soil conditions. The goal of the project is to create a Soil Moisture Sensor that can accurately measure the moisture level and monitor the temperature of the plant. Furthermore, the proposed system is an embedded system that will measure a plant's moisture level with minimal human involvement.