DEVELOPMENT OF MOISTURE SENSOR INTERFACE USING ARDUINO

This thesis is presented in partial fulfillment for the award of the Bachelor of Engineering

(Hons) Electronics

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ABSTRACT

This project is to develop an interface sensor's signal to the board and shows the data read from the sensor using LCD and connected to PC using a serial monitor. The data of soil's resistivity from the sensor is transmitted to Arduino. Arduino then will convert it to volumetric water content(VWC) value and displayed it on LCD or serial data on PC. The implementation of the study used a microcontroller that was called Arduino Uno and integrated with SD card shield module as the data collector. From the testing it shows that the sensor capable to read 1% to 79% of moisture sensor based on the calibration made.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

This experiment aimed to create application in agriculture field to monitoring the soil moisture for the crops. A moisture sensor works by estimating the amount of water in soil based on the dielectric constant, or the soil's ability to transmit electricity. The dielectric constant increases as the soil's water content increases, producing an estimate of how much water the soil holds. The amount of moisture in the soil will be view in the percentages or detection by the output devices.

The electromagnetic technique (resistive sensor) used in this project as the method to determine the soil moisture and it depend upon the effect of moisture on the electrical properties of soil. Soil resistivity depends on moisture content, hence it can help as the basis for a sensor[1]. The two probes is used to pass current through the soil, and then it will read that resistance to get the moisture level. More water makes the soil conduct electricity more easily (less resistance), while dry soil conducts electricity more poorly (more resistance)[2]. The difficulty with resistive sensors is that the absolute value of soil resistivity depends on ion concentration as well as on moisture concentration [3].