



**UNIVERSITI TEKNOLOGI MARA**

**AUTOMATED WATER STORAGE MONITORING  
SYSTEM FOR RURAL COMMUNITY IN  
MALAYSIA BASED ON ARDUINO  
MICRCONTROLLER**

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## ABSTRACT

This project present a model representation of a simple and automated low cost water storage system in rural area intended to satisfy the demand of clean water and water shortage. Water is an essential element in maintaining life and needed for all social and economic endeavours. There are still many rural areas in Malaysia that does not have the privilege to have clean water supply to satisfy the demand of water usage in daily life, such as in rural area in Kelantan, Sabah and Sarawak. Almost of the rural area community still depends on the water sources from the self-dug water well. The problem that they are facing is the water from the water well is not enough for the whole household at one time. Moreover, almost every home with a well has a pressure tank, however not every home with a well has a well water storage system. This happened because the rate of the water usage is faster than the rate of the groundwater to recharge in the water well. Groundwater recharge is usually influenced by climate variability and human intervention and in Malaysia, groundwater level decreased day by day due to unnecessary withdrawal from irrigation sectors. Besides that, the groundwater is not clean enough as the water are mixed up with soil around the well causing the water to turn yellowish in color and it is cannot be consumed especially for them to use for drink and cooking purpose. To overcome these, an automated low cost water storage system will be developed. The water storage model will have three main parts. The water pumped system, water filtration system and the water storage unit. These three parts communicates using a microcontroller. The concept of the idea of this system is underground water usually rises only at a certain point. If there is no usage of the water, the water level will remain the same until someone uses it and it takes time for the underground water to recharge. By having this system installed, whenever the water well is not in used such as at night time, the water will be pumped automatically to the storage unit through the filtration unit. When it is recharged, it will be pumped again. This process will be continuously automatically control, until the storage unit is full and the water is sufficiently enough for the daily household usage. As conclusion, the system capabilities to help storing clean water in rural area, thus solving clean water and sanitation issues while been monitored.

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## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Introduction**

In this chapter, the overview of the project will be detailed explained. Conveying the applicable procedures has been used in the project and the expected overall performance using the procedures will be explained. Also, in this chapter will state the problem statement and finally come up with a several objectives. Moreover, it will also touch on the scope of the project work and the organization of the project report.

#### **1.2 Project Background**

Water is a fundamental component in keeping up life and required for all social and economic efforts [1]. It is not only meeting the current needs based on sustainable development of water resources, besides it is important for the future generation's needs, which has become a subject direction of many studies [2]. In support of Vision 2020, Malaysia will preserve and manage its water to ensure good enough and safe water for all. Two of the key purposes of the visions are water for people; to have an adequate supply of safe and good quality water supply is essential for the promotion of public health and water for food and rural development; provision enough water that