POLITEKNIK

SULTAN SALAHUDDIN ABDUL AZIZ SHAH

**WATER RECYCLE SYSTEM WITH LDR
SENSOR**

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JABATAN KEJURUTERAAN ELEKTRIK

NOVEMBER 2021

WATER RECYCLE SYSTEM WITH LDRSENSOR

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

JABATAN KEJURUTERAAN ELEKTRIK

NOVEMBER 2021

CONFIRMATION OF THE PROJECT

The project report titled "PORTABLE WATER RECYCLE SYSTEM WITH LDR

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 : PUAN MASILAH BINTI ATAN

Supervisor's signature:

Date   :   21/06/2022

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   : **NURFARAHEEN ASYIQIN BINTI ZAMRI**

Registration Number : **08DEU19F2025**

Date   :   17/06/2022

DECLARATION OF ORIGINALITY AND OWNERSHIP

TITLE   :   **WATER RECYCLE SYSTEM WITH LDRSENSOR**

SESSION: **SESI 1 2021/2022**

1. I,   **1. NURFARAHEEN ASYIQIN BT ZAMRI (08DEU19F2025)**

    is a final year student of **Diploma in Electrical Engineering, Department of Electrical, Politeknik Sultan Salahuddin Abdul Aziz Shah**, 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;
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    ....…….   ……… … …
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)   NURFARAHEEN
    ASYIQIN BINTI ZAMRI

    In front of me, Click here to enter text. (Click here   )
    to enter text.) As   )   MASILAH BINTI ATAN
    a project supervisor, on the date: 21/06/2022

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 (POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH) for their guidance and constant supervision as well as for providing necessary information regarding the Project & also for their support in completing the Project.

I would like to express my gratitude towards my parents & member of (PROJECT 2) for their kind co-operation and encouragement which help me in completion of this Project. I would like to express my special gratitude and thanks to industry persons for giving me such attention and time.

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

ABSTRACT

According to an article, water pollution is a major problem in the global environment. The main purpose of this project is to provide a safe-consume water and a cheaper water treatment. Furthermore, with the existence of this project, it can facilitate more work to be done with the perimeter of remote areas and to solve the problem by running it at any desired time. This project helps to reuse the contaminated water, reduce organisation's operating costs and make technology a way to solve human's problems. This project will be use to reuse water from two source that come from rain water and river water. Water recycle system runs off using Arduino and use a copper plate sensor that will transmit signal to these system to operate. This project also detect water turbidity using light dependent resistor (LDR) as the sensing unit. The percent of water turbidity level will be displayed on the LCD screen. A water pump 12V used to control and pump water from the tank. This particular Water Recycle System use a sensor that will transmit signal to these system to operate. This project will solve the persistent problem that related to water pollution all over the country and produce a safe-consume water for peoples.

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paragraph and not more than 200 words in one page.
The abstract should be written in single spacing.
The abstract should contains, an introduction, problem statement, research objectives, results and conclusion (optional)

ABSTRAK

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Menurut sebuah artikel, pencemaran air adalah masalah utama dalam persekitaran global. Tujuan utama projek ini adalah untuk menyediakan air yang selamat digunakan dan rawatan air yang lebih murah. Tambahan pula, dengan adanya projek ini, ia dapat memudahkan lebih banyak kerja dilakukan dengan perimeter kawasan terpencil dan menyelesaikan masalah dengan menjalankannya pada bila-bila masa yang dikehendaki. Projek ini membantu untuk menggunakan semula air yang tercemar, mengurangkan kos operasi organisasi dan menjadikan teknologi sebagai cara untuk menyelesaikan masalah manusia. Projek ini akan digunakan untuk menggunakan semula air daripada dua sumber iaitu air hujan dan air sungai. Sistem guna semula air dijalankan menggunakan Arduino dan menggunakan sensor plat kuprum yang akan menghantar isyarat kepada sistem ini untuk beroperasi. Projek ini juga mengesan kekeruhan air menggunakan perintang bergantung cahaya (LDR) sebagai unit penderiaan. Peratusan tahap kekeruhan air akan dipaparkan pada skrin LCD. Pam air 5V digunakan untuk mengawal dan mengepam air dari tangki. Sistem Guna Semula Air ini menggunakan penderia yang akan menghantar isyarat kepada sistem ini untuk beroperasi. Projek ini akan menyelesaikan masalah berterusan yang berkaitan dengan pencemaran air di seluruh negara dan menghasilkan air yang selamat digunakan untuk rakyat.

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CHAPTER 1

INTRODUCTION

1.1   Introduction

Water is the most valuable resource on the face of the planet. It is necessary for the survival and well-being of humans. In order to ensure the cleanliness of water in tanks, particularly in high-rise buildings and residential areas, scheduled inspections and specific cleaning processes are required. These maintenance tasks are hazardous to the employees of the water operator and might be expensive for the customers. Cleaning techniques may include the use of chemicals, which can raise the cost of maintenance and cause water to be wasted during the cleaning procedure.

I had made a major modification of my final project, the Portable Water Recycle System with LDR sensor in previous entry with something which is useful especially to traveler. Thus, our current activity was set up to refining our prior project into something that give meaningful effect to us as a students, as a designer and a human being. The main reason of building this project is to encourage peoples to reuse contaminated water.

1.2   Background Research

In this paper, we present the development of a portable water recycle system together with the study on water turbidity using light dependent resistor (LDR) as the sensing unit. The system comprises of a microcontroller (Arduino Uno), a micropump, a sensing unit and a water filter. The main objective of this paper is to study the ability of LDR sensing unit in detecting changes in water and to define the turbidity value of the water.

This paper also described how the microcontroller controls the filtration system. Experiments on water turbidity was conducted under two conditions, undisturbed flow and continuous flow, which will affect the measurements of the LDR. Results

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show that the LDR readings in continuous flow require more time in between reading so that the turbidity value can be consistent.

Results show that the LDR sensing together with the microcontroller can create a system that is capable of measuring water turbidity for water resources e.g. rivers, lakes, treatment plants etc. The implementation of this project can potentially help consumers in monitoring their water clean and can be included in the smart home system.

1.3 Problem Statement

A study is being conducted by my project titled Portable Water Recycle System with LDR Sensor which is taken based on ideas sparked from observations of the current human way of life. The project is made to make it easier for consumers to use water quickly and easily and save costs. Furthermore, with the existence of this project, it can facilitate more work to be done with the perimeter of remote areas and to solve the problem by running it at any desired time.

1.4 Research Objectives

The main objective of this Project is specifically created for a frequent traveler or an outdoors enthusiast that are struggling to find clean water while doing outdoor activites.

More specifically the principle objective of this research are:
1. Reuse the contaminated water.
2. Prevent pollution.
3. To reduce organisation's operating cost
4. To make a technology as a way for solving a human problem

1.5 Scope of Research

1. This Project is focusing specifically created for a frequent traveler or an outdoors enthusiast that are struggling to find clean water while doing outdoor activites.
2. The emphasis is this project can be used for home water supply emergencies.
3. The main controller is using Arduino UNO atmega based.

1.6 Project Significance

Water is such an essential part of our daily lives that many times we don't stop to consider where it's being sourced or the quality of it. We assume we're receiving the best possible output. For many, tap water is deemed undrinkable, which is where

filtered water comes into play. The importance of water filtration is that it gives people access to clean water that is free of contaminants, that tastes good, and is a reliable source of hydration. Without it, there's the risk of becoming ill from contaminated water or the alternative of drinking other beverages that may not be as good for your health as purified water.

Filtration operates entirely on particle or droplet size (and, to some extent, shape), such that particles below a certain size will pass through the barrier, while larger particles are retained on or in the barrier for later removal [3].There are a number of tap water filtration systems available in the market, but not all of them are of good quality. The technology is greatly improved and the water produced by these filters is much safer and cleaner than ever before. However, recently it is hard to find a portable water filter where consumers can carry it anywhere and used it for more than one purpose. Hence, we have come out with a solution to design a portable water filter with extra feature, which is the heating element to boil the water. That means the filter can be use for cold and hot water. In terms of scientific point of view boiling would be able to kill all the germs and microorganism in the tap water. There are a few aspects that needed to be considered in the design process which are economical, convenient and user friendly.

1.7 Chapter Summary

This project demonstrates the fundamentals of constructing a simple microcontroller-based recycling system, which may be expanded upon for more complex applications. Water Recycle System with LDR Sensor based on studies of the existing human way of life, which is a portable system. Customers will be able to use water more rapidly and at a lower cost thanks to the project. As a bonus, the availability of this project makes it possible to accomplish more in outlying regions by running it at any time, which can help solve the problem. Water is cloudy when the it contains many particles of suspended material giving it a brownish color. The ingredients that cause turbidity include sludge, well-defined organic materials, and other suspended particles. A nephelometer is a tool for measuring turbidity that gives results in units of Nephelometric Turbidity Unit (NTU) [35]–[37] it is the standard unit for measuring turbidity. In nephelometry and turbidimetry, light sources are projected through liquid samples stored in transparent sample containers. Generally, nephelometry uses light sources that have relatively short wavelengths between 500 to 800 nm and are effectively used to detect microscopic particles. Whereas, turbidimetry generally uses light sources that have longer wavelengths between 800 and 1100 nm and are effectively used to detect particles of larger size.