

POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

SMART CHLORINE SYSTEM

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ELECTRICAL ENGINEERING DEPARTMENT

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This report is submitted to the Department of Electrical Engineering in fulfillment of the requirements of the Diploma in Electrical Engineering

ELECTRICAL ENGINEERING DEPARTMENT

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TITLE : SMART CHLORINE SYSTEM

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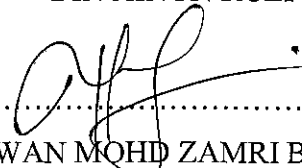
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(After the content is referred to as 'the Polytechnic')

2. We acknowledge that 'The project above' and its intellectual property are the original work / art of our work without taking or imitating any intellectual property from any other party.

3. We agree to transfer the intellectual property of 'The Project' to 'the Polytechnic' to fulfill the requirement for Diploma in Electronic Engineering (Control) award upon us.

Made and truly acknowledged by;)
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In front of me, MR WAN MOHD ZAMRI BIN)
WAN AB RAHMAN As the project Supervisor) MR WAN MOHD ZAMRI BIN
on date:) WAN AB RAHMAN



APPRECIATION

Many thanks and a heartfelt thank you to my Project Supervisor, Mr. Wan Mohd Zamri bin Wan Ab Rahman for providing me with the guidance, advice and guidance to complete this project with great patience.

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May this study be blessed by God.

Thank you.

ABSTRACT

The purpose of this project is to simplify the worker at the hotel with the pool work . Usually, the worker need to go at the pool and put chlorine in the pool to keep the water clean. If the worker put too much chlorine in the pool , in can cause eye , skin will sick . So ,with this machine that we created it will ease the work and will not take long time to do the work .Worker just need to use the smartphone that will be linked with our machine .They just need to touch the smartphone and the machine will do the work for them .This will saved the time for worker to do other work .This machine can help hotels and garden workers to facilitate the work that is considered to be inferior if this is particularly important especially on the large scale .the worker only need to put the chlorine with water into the machine once a week .

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SUMMARY

ATTACHMENT

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

This project has not been introduced in general yet, our project is to help hotels and garden friends to facilitate the work that is considered to be inferior if this is particularly important especially on the large scale.

We introduce this chlorine machine to facilitate the work given to the workers. This created chlorine machine works to measure the reading of chlorine in the pool or in the water theme park.

How to use this machine is the machine will send a notification to the application that we have created on the phone. Inside the machine contains a number of chlorine we have been in and fit in the machine.

1.2 STUDY OF BACKGROUND

The background of the study refers to the latest information related to the current issue that is the focus of the study. The purpose is to provide a comprehensive overview of the studies to be conducted. This section also highlights key or current issues related to the focus of the study. This issue is usually summarized briefly in a few paragraphs and is supported by previous research findings such as books, journal articles, reports, newspapers or government policy.

Chlorine is a greenish-yellow gas that dissolves easily in water. It has a pungent, noxious colour that some people can perceive smell at concentrations above 0.3 part permillion. Chlorine is an excellent disinfectant commonly added to drinking water supplies to kill harmful micro-organism. Chlorine is not only an effective disinfectant but it also reacts with ammoniamiron and other metal s and some organic compounds to improve overall water quality (white, 2000).

In parts of the world when chlorine is not added to drinking water, thousands of people die each day from waterbone disease like typhoid and cholera according to (Darnail 1999). However, the addition of chlorine in water has its limitations but its dangers, are relatively shortlived compared to the dangers of most other highly poisonous substances. Rideal et al, (2005) suggests that this is because chlorine reacts quickly with other substance in after (and forms combined chlorine) or escapes as a gas into the atmosphere. The free chlorine test measures only the amount of free or dissolved chlorine in water, but the total chlorine test measures both free and combined of chlorine.

According to Richardson et al (2007), if the water contains a lot of decaying materials, free chlorine can combine with them to form disinfection -by- products like tribhalomethanes. Though there is a limit to the use of chlorine as negative results are possible with the addition of too odour in water are often enhanced.

Fair et al, (2000) states that less than one half (0.5mg/L) of free chlorine is needed to kill bacterial without causing water to smell or taste unpleasant. Most people cannot detect the presence of chlorine on water amount (1.0mg/l). although 1.0mg/l chlorine in water is not harmful

to people, it does cause problems to fish and other aquatic animals when they are exposed to it over a long period of time. It is very important for water suppliers to monitor closely the level of chlorine present in the water (Hodges 1997).

1.3 PROBLEM STATEMENT

Problem statement refers to an issue / problem that required a solution based on the background of the study. It outlines the problems to be solved and the contribution of the research to solve the problem in whole or in part.

In Malaysia, many hotels are already advanced but the system for managing the pool is still old style that is workers still go to the pool everyday and put chlorine into the pool. Then, workers do not know the actual chlorine size to be put into the pool. Bad effects will happen to the human body if workers put too much chlorine into the pool. This machine will save your time and avoid job suspension.

1.4 RESEARCH OBJECTIVE

The objective of the study is to state clearly how the purpose of the study can be achieved. The number of proposed research objectives is between two and three objectives. The SMART criteria (specific, measurable, achievable, realistic and time constrained) are recommended as guidelines for the writing of research objectives.

The main objective of the project is to automate the process of placing chlorine in the pool. This procedure can also simplify the method of placing chlorine in the pool by introducing a new matrix system thus reducing the labor force as well as the amount needed for the entire procedure. This process involves the ph meter to analyze the amount of ph of chlorine in a pond by placing the meter in the pond containing the project. Therefore, the system provides a very effective way to stabilize the water ph without the excess or reduced chlorine in a chlorine..

1.5 RESEARCH QUESTION

The research question is basically a specific question that researchers want to answer based on the research objective. It needs to be written in the form of a question. If the research question involves hypothesis testing (such as making comparisons, determining the existence of relationships and making predictions), the hypothesis needs to be stated.

- a) Do you always itch on your skin or eyes hurt when swimming in a lay pool?
- b) Can chlorine be placed in the pool automatically?
- c) Can we put the right amount of chlorine in the pool?

1.6 RESEARCH SCOPE

The scope of the study explains the limitations of the research being carried out. This is to ensure that the research is not carried out of scope or limit.

This project is used to save energy by automatically putting chlorine into the pool by sending notifications to users. The focus of the system is for employees or people who are assigned chlorine but are very busy and cannot afford chlorine at a given time.

1.7 IMPORTANCE OF RESEARCH

The importance of this study is also referred to as the interests of the study to briefly explain the interests or values and contributions / implications of the study. Chlorine putting system can ease the burden on workers to put it down if needed. Knowing when and how much chlorine are two important aspects in the process of laying down chlorine. To make the assigned worker or person function easily, this system is realized.

1.8 DEFINITION OF OPERATION

From this project, the result we expect is that we get the correct chlorine readings and will not cause any adverse effects on the person who takes a bath. The system works on the principle of measuring water ph levels using sensor technology using Arduino Uno, ESP8266 Node Mcu, Relay module & DC motor. To provide sufficient amount of chlorine when needed. The project may need to minimize the efforts of pool workers..

1.9 CHAPTER SUMMARY

The Chapter Summary summarizes the main sub-sections that have been presented in Chapter 1 without introducing new material and then proves the continuation of the next chapter.

Therefore, many improvements can be made based on this initial design. That being said, it is felt that this design represents a small-scale functional model that can be replicated to a larger scale. Suggestions are given as ideas for future expansion of this project. While it may seem more challenging and challenging, there are many other possibilities such as automating complex addition of chlorine from similar ones or what's called "Internet automatic chlorine". In addition, using more than one sensor is another great idea for an experiment, but there are also many other ideas for experiments and challenges such as using solar power, a timer to set the correct water pH reading system without any error. However, independent of the methods used to build it, there is no doubt that this system can be very helpful in solving many problems, from the seemingly harmless to those on the most important and most dangerous scale to the human population. Using this system, it is possible to control the water pH reading in line with the chlorine levels that need to be set. While it can be very useful for humanity in general, employees and companies are the ones who can benefit the most from this system.

CHAPTER 2

LITERATURE STUDIES

The term "literature" means a research article that is referred to to understand and study the research problem. The literature review is used to provide the context of the study by looking at the research that has been conducted in the field of research and not just summarizing the research conducted by other researchers (Kumar, et al., 2013). The references used should be relevant to the focus of the study. The contents of this chapter may contain a brief introduction to the subject of the study, concept or theory, previous studies related to the field of study and summary of this chapter.

2.1 CHAPTER INTRODUCTION

General topics, issues or areas of focus need to be identified and then provide the appropriate context for the literature review. The overall trend of the topic, suggestions in theory, methodology, evidence and conclusions or new issues / perspectives should be stated.

In this chapter, further discussion on the related past studies and information that make significant contributions in this area of study, smart chlorine system or closely related system. There is a wide source of information of the related areas published in the web about watering system. The gathered information gives recommendations on the method and sample current opinion. Thus, the idea supported and justified with significant past research.

2.2 CONCEPTS / THEORIES

Literature materials (research, reviews, theoretical articles, case studies, etc.) based on the same categories / themes as the author's summary, purpose or objective and chronology should be collected. Any relevant research, article or reference material should be summarized. The main ideas are stated at the beginning of the paragraph and elsewhere strategically to help the reader understand the comparisons and analysis presented.

Modern chlorine systems could be effectively used to put the chlorine when they need it. But this manual process to put chlorine requires two important aspects to be considered, when and how much chlorine to put into the water. In order to replace manual activities and making workers work easier, smart chlorine system is created.

2.3 PREVIOUS STUDIES

As a halogen, chlorine is a highly efficient disinfectant, and is added to public water supplies to kill disease-causing pathogens, such as bacteria, viruses, and protozoas that commonly grow in water supply reservoirs, on the walls of water mains and in storage tanks.¹ The microscopic agents of many diseases such as cholera, typhoid fever, and dysentery killed countless people annually before disinfection methods were employed routinely.

Chlorine is manufactured from salt by electrolysis or other methods. It is a gas at atmospheric pressures but liquid at high pressure. The liquefied gas is transported and used as such.

As a strong oxidizing oxygen, chlorine kills via the oxidation of organic molecules.¹ Chlorine and hydrolysis product hypochlorous acid are neutrally charged and therefore easily penetrate the negatively charged surface of pathogens. It is able to disintegrate the lipids that compose the cell wall and react with intracellular enzymes and protein, making them nonfunctional. microorganism then either die or are no longer able to multiply.

2.4 CHAPTER SUMMARY

This session discuss on the overall project theory and concept. The purpose of this is to explain the perspective and method that is used in previous research or project and to classify how much this project related with those research and theory. Moreover, this session will show the theory and concept used to solve problem. Theoretical is very important as a guidelines in doing any kind of research.

1. *F.E. Turneaure; and H.L. Russell (1901). Public Water-Supplies: Requirements, Resources, and the Construction of Works (1st ed.). New York: John Wiley & Sons. p. 493.*
2. *"Typhoid Epidemic at Maidstone". Journal of the Sanitary Institute. 18: 388. October 1897.*
3. *"A miracle for public health". Retrieved 2012-12-17.*

CHAPTER 3

METHODOLOGY OF THE STUDY

3.1 CHAPTER INTRODUCTION

Methodology is the systematic, theoretical analysis of the methods applied to a field of study. Typically, it encompasses concepts such as paradigm, theoretical model, phases and quantitative or qualitative techniques. A methodology does not set out to provide solutions it is therefore, not the same as a method. To make employees or employees work easily, an automated chlorine system was created. There are many types using automated chlorine systems that use ph meters, tubes, nozzles and more. This project uses a sprinkler system as it can put chlorine into the pool

3.2 STUDY DESIGN

The Design of the Study briefly describes the research design to be used (whether exploratory, descriptive, causal or experimental). This study will be carried out using experimental design. This study will also be made available to the public through experiments conducted.

3.3 METHODS OF DATA COLLECTION

Quantitative methods were selected for data collection using questionnaires. The questionnaire was distributed to the respondents face to face. The data collection period is 3 months, from January to April 2019.

3.4 INSTRUMENT REVIEW

An automated chlorine system has been developed to avoid excessive use of chlorine for swimming. The system has a wireless network that distributes water ph meters and sensors placed in the pool and sensors placed in the pool to monitor the water level of the pool .

3.5 SAMPLING TECHNIQUES

An automated chlorine system is designed to keep water levels in good condition. The system acts accordingly to supply the required amount of chlorine and then closes the supply of chlorine when the pH reading is sufficiently high.

3.6 DATA ANALYSIS METHODS

In this project, an automated chlorine smart system was implemented and it measures the current pH level of the water and then supplies the required amount of chlorine needed by the pool. The content of chlorine in water can be controlled. This code is written in such a way that it is programmed to sense the ph of water at a particular percentage example. If the chlorine content exceeds the specified threshold specified by the ph meter then the required amount of chlorine is supplied until it reaches the threshold. Also, it reduces excessive use of chlorine as well as preserves the health of those bathing in the pool. This system also allows the pool water to be kept in the correct pH reading.

3.7 CHAPTER SUMMARY

This project provides a significant increase in the advantages to traditional irrigation methods. . It provides chlorine into the pool based on ph meter readings and reduces chlorine wastage. It uses matrix system to reduce chlorine consumption. Therefore, this is a comprehensive improvement to the old-fashioned chlorine-based method as well as the previous automated method.

CHAPTER 4

RESULTS

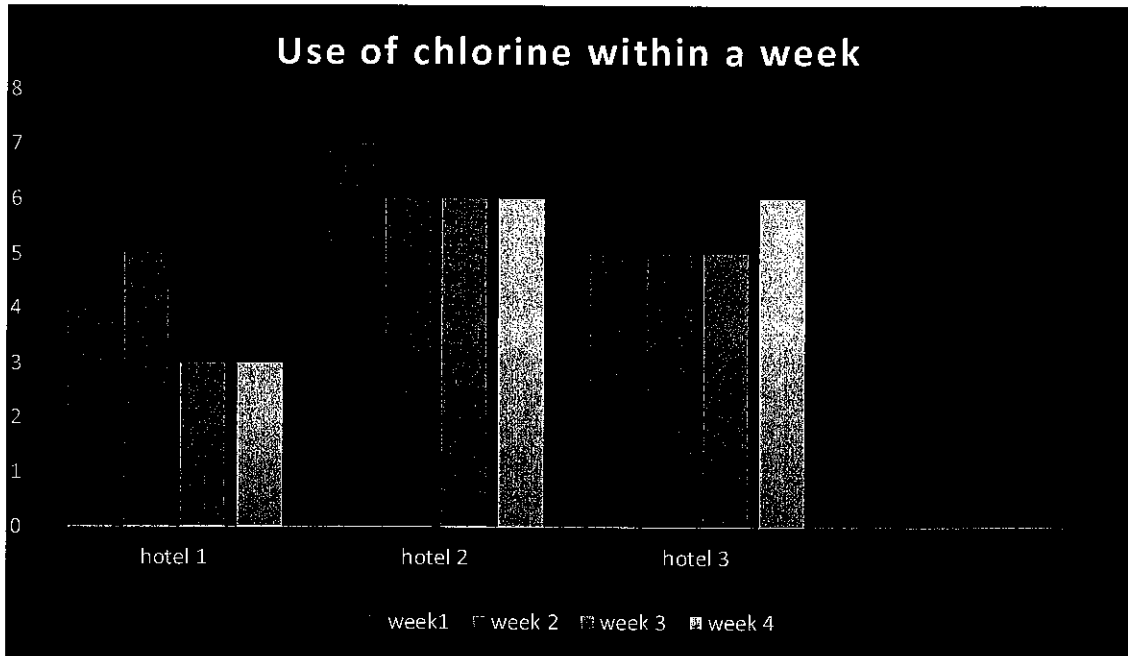
4.1 CHAPTER INTRODUCTION

This chapter presents and analyzes the research data. Overall insights and analysis presented in the form of tables, diagrams and statements to enable important findings submitted. This section needs to be organized according to the hierarchy of the research questions to show that all the questions have been answered.

4.2 FEEDBACK RATE

A total of 20 questionnaires were mailed to respondents through convenience whatsapp and telegram. Out of which 10 company were returned, representing 85% which have a swimming pool in the house or hotel area of the response rate. The response rate was considered realistic considering the difficulty of putting chlorine to participate in such studies.

4.3 RESEARCH FINDINGS



4.4 CHAPTER SUMMARY

To ensure that anyone has a swimming pool, chlorine-based activities should be carried out on the existing pools to ensure that the water stays clean and healthy for bathing and that it responds from public opinion on how to properly know the safe water ph.

CHAPTER 5

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 CHAPTER INTRODUCTION

This chapter will describe in detail the research that is intended to be carried out and described in the sub-section of the discussion, conclusions and suggestions. The introduction of this chapter also aims to inform the contents of the chapter as a whole.

5.2 DISCUSSION

The great and expected results from our experiments are inferred from the fact that our company has successfully avoided excess chlorine and deficiencies, thanks to sensors placed in the pool to measure water ph levels and control water pumps. The system works with the principle of measuring the water level of the ph by using sensor technology which in turn controls the water pump through the microcontroller to provide sufficient chlorine when needed.

5.3 SUMMARY

From this project, the expected results are inferred from the fact that the pool has obtained a true reading of the ph value and this is for the sensor located in the pool measuring the water ph. The system works on the principle of measuring the ph level of water reading using sensor technology using Arduino Uno, ESP8266 Node mode, Relay module & DC motor. To provide sufficient amount of chlorine when needed.

5.4 RESEARCH IMPLICATION

The automated chlorine system can be used to solve many problems in hotels or homes with large or small swimming pools, this project certainly prevents people from getting sick by putting too much chlorine in the pool. In addition, it also makes it easier for employees to lay out the chlorine as well as put it in the right amount of time. With our project, it will reduce the cost of buying chlorine as it is not put in excess. in turn, this system can reduce the time and energy to put chlorine into the pool. This project is arguably the first to be released in the pool industry in Malaysia. With this project, it can increase the knowledge of chlorine and how much reading should be placed on the amount of water needed. . Cholesterol problems are also often taken lightly by some people without knowing the adverse effects they would have if bathing in a pool with excess chlorine.

5.5 RECOMMENDATION

There are many other possibilities for future work such as creating an expo for exposing the public to the importance of chlorine in water. In addition, using more than the prescribed amount of chlorine can have a detrimental effect, but there are some workers who do not care. We also recommend that some parties try to make these chlorine substances healthier so that they are not harmful to human health. Every hotel with a swimming pool should also provide proper chlorine signage and volume so that many can improve their knowledge of chlorine.

5.6 CHAPTER SUMMARY

The basic concept of the chlorine smart system is to place the sensor inside the pool and allow the sensor to act if the ph value is missing. If sufficient chlorine is present, the sensor will prevent the sprinkler system from activating and applying chlorine. However, if it feels the ph value decreases, it allows the irrigation system to work. The following information is intended to help explain the nature, types of water sensors and to maintain the value of ph in the pond. Also included is a brief summary of the comparison of chlorine values that control irrigation for the pond. Microphone-based control systems monitor and control all irrigation system activities efficiently. the pH value of the pool will be measured and the water supplied to the pool accordingly. This system saves chlorine as it directly supplies the right amount of excess. It also helps save time, eliminating human error in putting chlorine in the pool.