

POLITEKNIK

SULTAN SALAHUDDIN ABDUL AZIZ SHAH

**IOT BASED KITCHEN GAS LEAKAGE
DETECTOR**

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JABATAN KEJURUTERAAN ELEKTRIK

(KAWALAN)

NOVEMBER 2021

IOT BASED KITCHEN GAS LEAKAGE DETECTOR

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NUR FATIN NATASYA BINTI RAZALI	08DJK19F2006

This report was 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 "IOT BASED KITCHEN GAS LEAKAGE DETECTOR" 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 SITI HAJAR BINTI ABDUL HAMID**

Supervisor's signature:

Date :

Verified by:

Project Coordinator name : **PUAN FA'IZAH BINTI YA'ACOB**

Signature of Coordinator :

Date :

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

1.

A small, square image showing a handwritten signature in black ink on a light-colored background. The signature is stylized and appears to be the initials 'NF'.

Signature :

Name : **NUR FATIN NATASYA BINTI RAZALI**

Registration Number : **08DJK19F2006**

Date :

DECLARATION OF ORIGINALITY AND OWNERSHIP

TITLE : IOT BASED KITCHEN GAS LEAKAGE DETECTOR

SESSION: SESI 1 2021/2022

1. I, **1. NUR FATIN NATASYA BINTI RAZALI (08DJK19F2006)**

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;	
a) NUR FATIN NATASYA BINTI RAZALI (Identification card No: - 010326-07-0180) (NUR FATIN NATASYA BINTI RAZALI)
In front of me, PUAN SITI HAJAR BINTI ABDUL HAMID (Click here to enter text.) As a project supervisor, on the date: (PUAN SITI HAJAR BINTI ABDUL HAMID)

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 Siti Hajar, my lecturers, and my friends 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 for their kind co-operation and encouragement which help me in the 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 the people who have willingly helped me out with their abilities.

ABSTRACT

'IOT BASED KITCHEN GAS LEAKAGE DETECTOR' is a gas and smoke detector for community members for use in the home area as one of the home security applications. The function of this detector is usually used in manufacturing, and industrial areas as well as in supermarkets and offices. However, as a society, we should have safety devices at home like these gas and smoke detectors at least because the safety of household members is very important. Therefore, I chose to produce this project in order to help the community to ensure the safety of the home area and members of the household safe from unforeseen accidents such as fires caused by gas spread in the kitchen area unknowingly. The system uses an ESP32 Microcontroller, MQ-2 gas detector, sound alarm (buzzer), LEDs, and notifications on the Blynk App. In conclusion, my main focus in this project is to ensure the safety of members of the household and also make it easier for them to always be sensitive to the situation that occurs in the house.

Commented [FAP1]: The abstract must be simple, written in one paragraph and not more than 200 words in one page. The abstract should be written in single spacing. The abstract should contain, an introduction, problem statement, research objectives, results and conclusion (optional)

ABSTRAK

'IOT BASED KITCHEN GAS LEAKAGE DETECTOR' adalah pengesan gas dan asap untuk kegunaan ahli komuniti di dalam rumah sebagai salah satu aplikasi keselamatan rumah. Fungsi pengesan ini biasanya digunakan dalam pembuatan Kawasan perindustrian serta di pasar raya dan pejabat. Namun, sebagai masyarakat kita seharusnya mempunyai alat keselamatan di rumah seperti pengesan gas dan asap ini sekurang-kurangnya kerana keselamatan ahli isi rumah adalah sangat penting. Oleh itu, saya memilih untuk menghasilkan projek ini demi membantu masyarakat bagi memastikan keselamatan Kawasan rumah dan ahli isi rumah selamat daripada kemalangan yang tidak diduga seperti kebakaran yang berpunca daripada gas yang merebak di Kawasan dapur tanpa disedari. Sistem ini menggunakan Pengawal Mikro ESP32, Pengesan Gas MQ-2, Penggera Bunyi (buzzer), LED dan pemberitahuan pada Aplikasi Blynk. Kesimpulannya, focus utama saya dalam projek ini adalah untuk memastikan keselamatan ahli isi rumah dan juga memudahkan mereka untuk sentiasa peka dengan situasi yang berlaku di dalam rumah.

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CHAPTER 1

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INTRODUCTION

1.1 Introduction

Smoke detectors are intended to detect smoke and gases which usually indicate the occurrence of a fire caused by scattered gas. The commercial type detector sends a fire alarm system signal to the control panel while an alarm installed in the house emits a visible or audible signal from the detector itself.

Following that, a system to overcome this gas leakage problem has been created and is known as IOT BASED KITCHEN GAS LEAKAGE DETECTOR. The advantage of the creation of this smoke and gas detection system is more user -friendly where it is very suitable according to the kitchen space. In addition, it is easy to install and offers an affordable cost to all users.

1.2 Background Research

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MQ-2 is one of the commonly used gas sensor in MQ sensor series. It is Metal Oxide Semiconductor (MOS) type gas sensor also known as Chemiresistors as the detection is based upon change of resistance of the sensing material when the gas comes in contact with the material. Using a simple voltage divider network concentrations of the gas can be detected. It can detect the gas and smoke anywhere from 200 to 10000ppm. We can say every single house have a LPG-Gas stove system for cooking and various other activities. There are LPG cylinder which are used as a fuel source for the gas stove. Many a times, disastrous accidents take place due to leakage of these cylinders, in this situation we must administer proper care and safety.

1.3 Problem Statement

The problem faced by the majority of the community is the state of safety of home and family members in the event of the unintentional release of gas or smoke. With the production of this IoT BASED KITCHEN GAS LEAKAGE DETECTOR project will provide convenience and benefits to the community. For example, if the gas cylinder in the kitchen releases gas without control then it is very likely that there will be a fire or shortness of breath in the house. Therefore, the production of this project is able to limit all that by giving a signal to the members of the household to act on the situation.

1.4 Research Objectives

The main objective of this project is to detect gas and smoke in the kitchen area. Besides, LED flaming indicates the detection of gas or smoke while buzzer will emit a sound after MQ-2 sensor can detect the gas. With the use of Blynk app, notification will be sent via direct internet access to our smartphone.

1.5 Scope of Research

1. Using ESP32 as a microcontroller
2. LED as a sign of gas detection occurring
3. Buzzer as an alarm device to households when the gas can be detected
4. Using the Blynk app on smartphones to receive notifications about gas or smoke detection.

Commented [FAP5]: This section contains clear scopes and limitations that you have considered in the project.

1.6 Project Significance

The purpose of the project is to design a system which detect gas leakage and alarms the user by sound produced by buzzer and Blynk notification delivery on smartphones.

Commented [FAP6]: This section contains the significance of the proposed project/research. You should cite previous research in this area. You should cite those who had the idea or ideas first, and should also cite those who have done the most recent and relevant work. You should then go on to explain why more work was necessary (your work, of course.)

1.7 Chapter Summary

This chapter tells about the introduction to the project to be produced. It also explains the problems faced by the household members as well as the scope of the project and the objectives of the project to help solve the problem more thoroughly. Hope that this project will help many people out there.