



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

**DESIGN AND IMPLEMENTATION OF GAS LEAKAGE
DETECTION SYSTEM FOR HOME SAFETY USING
IOT**

This report is submitted in accordance with the requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Computer Engineering Technology (Computer Systems) with Honours.

by

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APPROVAL

This report is submitted to the Faculty of Mechanical and Manufacturing Engineering Technology of Universiti Teknikal Malaysia Melaka (UTeM) as a partial fulfilment of the requirements for the degree of Bachelor of Computer Engineering Technology (Computer Systems) with Honours. The member of the supervisory is as follow:

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ABSTRAK

Ini adalah perlu bagi setiap rumah mempunyai alat yang boleh mengesan gas kebocoran. Ini kerana kebocoran gas yang boleh menyebabkan penghuni untuk mati sesak nafas apabila dihidu dan akhirnya akan membawa kepada letupan apabila ia dinyalakan. Ini seterusnya boleh menyebabkan beberapa kematian. Oleh itu, sistem pengesanan kebocoran gas untuk keselamatan rumah adalah dicadangkan. Objektif projek ini adalah untuk mereka bentuk sistem pengesanan kebocoran gas untuk mengesan kebocoran gas menggunakan sensor gas. Kedua, untuk memantau kepekatan gas LPG dengan menghantar mesej amaran kepada penghuni melalui telefon mudah alih mereka jika kepekatan gas melebihi nilai ambang. Ketiga, untuk menganalisis keberkesanan sistem maju daripada segi automasi keselamatan rumah yang menggunakan pelaksanaan IOT di dalamnya. Ini kebocoran sistem pengesanan gas digunakan Raspberry pi sebagai microcomputer data penghantar dari sensor untuk telefon bimbit pengguna melalui aplikasi melalui rangkaian wayarles. MQ-6 sensor gas digunakan untuk mengesan kebocoran gas di dapur. Hasilnya, sistem ini akhirnya akan mengesan kebocoran gas yang menghalang kebocoran gas pada masa hadapan daripada berlaku sejak penghuni akan dimaklumkan dengan maklumat kebocoran gas dari mana-mana sahaja melalui telefon mudah alih mereka. Projek ini adalah kos rendah dan memberikan keselamatan kepada setiap penghuni di rumah mereka. sistem ini akhirnya akan mengesan kebocoran gas yang

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ABSTRACT

It is necessary for every home to have a device that can detect a leakage gas. This is because the gas leakage may cause the occupants to suffocate when inhaled and will eventually lead to explosion when it is ignited. This consequently may cause a number of deaths. Therefore, a gas leakage detection system for home safety is proposed. The objective of this project is to design a gas leakage detection system in order to detect gas leakages using a gas sensor. Secondly, to monitor the concentration of LPG gas by sending an alert message to the occupants through their mobile phone if the concentration of gas exceeds the threshold value. Thirdly, to analyse the effectiveness of the developed system in terms of home safety automation which using an implementation of IoT within it. This gas leakage detection system used Raspberry pi as a microcomputer to transmit data from the sensor to the user mobile phone via apps through a wireless network. MQ-6 gas sensor is used to detect gas leakages in the kitchen. As a result, this system will eventually detect the gas leakage which prevent the future gas leakages from occurs since the occupants will be notified with the gas leakage information from anywhere through their mobile phone. This project is low cost and provides a security to every occupant in their home.

DEDICATION

To my beloved parents

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LIST OF SYMBOLS

cm	-	Centimetre
ppm	-	Parts per million
s	-	Second

LIST OF ABBREVIATIONS

ADC	Analog to Digital Converter
DAC	Digital to Analogue Converter

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