WIRELESS GAS LEAKAGE DETECTION SYSTEM USING MICROCONTROLLER AND GSM SIM900

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ABSTRACT

Gas leakage can be dangerous to the human by explosion, fire and asphyxiant. In chemical laboratory, gas leakage can harm the people in the area. However, there is no gas leakage detection system for chemical laboratory. The need of efficient gas leakage detection system in laboratory is important to avoid the dangerous situation to the people. In this paper, a wireless gas leakage detection system is developed to be applied in the chemical laboratory. The methane and butane gas were used in this project to test the system. The developed system consists of three main parts. It is Arduino Uno R3, MQ-9 gas sensor and alert system. The alert system consists of buzzer, DC fan and GSM Shield. The system is implemented in Arduino environment using C programming. Arduino and gas sensor is used to detect the gas leakage of natural gas. Conductivity level for gas sensor is standardized at resolution of 45. The detection starts when sensor read the changes of conductivity gas and trigger the buzzer and fan when exceed the reference value. Then, system simultaneously sends the alert message to inform the technician about the leaks of gas. In this project, the output voltage is representing the changes of concentration and conductivity level of gas. The system is successfully implemented and achieved the objective of the project.

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INTRODUCTION

1.1 Overview

This chapter will introduce the background of the study. The problem is briefly explained and the solution of the problem is identified. Beside that, the objectives of the research also specified based on solution needed to overcome the problem. Then, the scope of works also presented in this part which described the boundaries of the research. The benefits of this system are discussed in significance of work.

1.2 Background Of Study

The uses of the natural gases are more widespread along with the revolution of the technology. The natural gas is including methane, propane, butane and etc. The natural gas is widely used in homes as a compressed natural gas (CNG). CNG are mostly used in heating, lighting fixture and other appliances at homes. The usage of this gas also is commonly at an indoor environment like chemical laboratory [1]-[2].

Although the natural gas is widely used, it also can caused harm to the human such as personal injury and property damage [3]. This gives major disaster to the human if it exploded and causes a fire. The leakage of this gas also can affect the human health by asphyxiant [4]-[5].