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Gas Monitoring Using GSM

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Abstract*: Gas monitoring system is used to detect any leakage of LPG/CNG, in small scale factories or in home appliances also. It will detect the leakage of dangerous gas and alarm the user. This unit can be easily incorporated into an alarm unit, to sound an alarm or give a visual indication of the gas concentration. The sensor has excellent sensitivity combined with a quick response time. If the LPG sensor senses any gas leakage the output of this sensor goes low. This low signal is monitored by the microcontroller and it will identify the gas leakage to the respective mobile number.

Keywords: ***Alarm, Dangerous, Gas, Leakage, Monitoring, Microcontroller***

I. INTRODUCTION

In human's daily life, environment gives the most significant impact to their health issues. Therefore, environment and industry air quality issues are critically discussed to increase the awareness and responsibility regarding the threat on the environment towards public and workers health. Most of the dangerous gas such as carbon monoxide (CO), refrigerant gas and liquefied petroleum gas (LPG) are colorless and odorless compound that are produced by incomplete combustion. Therefore, gas detector device is needed in order to inform the safety situation continuously.

Carbon monoxide (CO), often referred to as a "silent killer" is an injurious gas and its prolonged exposure to living beings can lead to brain damage and even death. The harmfulness of CO is dependent on both, the concentration of the gas and the exposure time. Thus, a small concentration of the CO when exposed for a long period of time can be fatal just like a large concentration of the CO for a small period of time. Fires are the most common source of CO. In smaller quantities (e.g. 100 ppm) it may cause a headache and dizziness after a couple of hours of exposure. Higher concentrations (example 3200 ppm) may causes headaches and dizziness after 5–10 min, and death within 30 min. Very high concentrations (e.g. 12800 ppm) causes unconsciousness after a couple of breaths, followed by death in less than 3 min. The indoor dangerous sources are the leak source of CO, CO2 and CH4, which may be gas tank or the fire site. The essential component of coal gas or nature gas is CO or alkanes gas. The burning of chemical materials or decorative materials will emanate CO, CO2 and alkanes gas. The danger of these gases arising is from two aspects, one is the toxicity of these gases themselves, the other side is that the accumulation of these gases will easy be ignited. The position of gas tank or pipeline is usually fixed, so it is easy to inspect, yet the fire site is random, and it will be difficult for inspection.

II. LITERATURE SURVEY

Ashish Shrivastava, Ratnesh Prabhaker, Rajeev Kumar and Rahul Verma titled "GSM Based Gas Leakage Detection System", "Gas leakage is a major problem with industrial sector, residential premises and gas powered vehicles like CNG (compressed natural gas) buses, cars. This paper provides the design approach on both software and hardware. [1]

Md. B. Hossain, Saruar J. Shourov, Md. M. Rana and Md. S. Anower (2015) titled "Matlab Guidance Based Smart Gas Leakage Detection and Security System Using Analog to Digital Technique". In this paper develops and demonstrates an analog to digital conversion (ADC) technique based an electronic device which is used to detect gas leakage using mechanical sensors.[8]

Hitendra Rawat, Ashish Kushwah, Khyati Asthana, Akanksha Shivhare (2014) titled "LPG Gas Leakage Detection & Control System". This paper is aimed at develop the security of Home against Intruders, Gas Leak and Fire they are interfaced to each other and AT commands set used in communication.[9]

Ankit Sood, Babalu Sonkar, Atul Ranjan, Mr. Ameer Faisal (2015) titled "Microcontroller Based LPG Gas Leakage Detector Using GSM Module". The aim of this The system detects the leakage of the LPG (Liquefied Petroleum Gas) using a gas sensor and uses the GSM to alert the person about the gas leakage via SMS. [10]

III.PROBLEM STATEMENTS

There are so many health issues related to dangerous gas in industrial area. Thus, the atmosphere of a workplace should be regularly

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monitored and controlled in order to maintain clean air environment. However, efforts in industrial air quality control have been impeded by the lack of science-based approaches to identify and assess atmosphere air quality and level of dangerous gas.

As a solution for the problem, a monitoring system of gas detector by wireless system needs to be developed in order to solve the problem. By monitoring system wirelessly, user can remotely view the condition of the room or office without them being there themselves.

IV. HARDWARE IMPLEMENTATION

We implement proposed system based on circuit diagram in fig 1. A circuit consist of microcontroller and gas module.

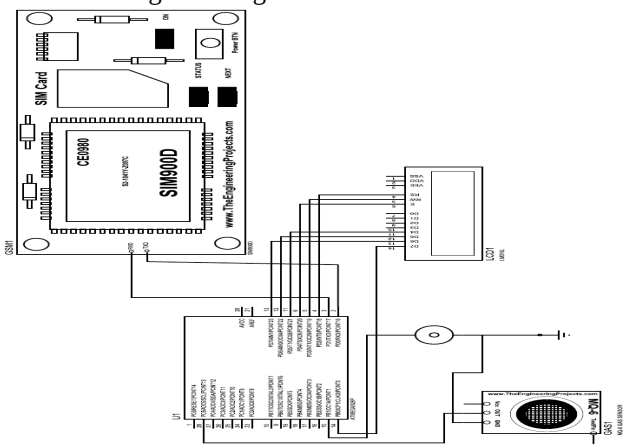

Fig. 1 Simulated Model

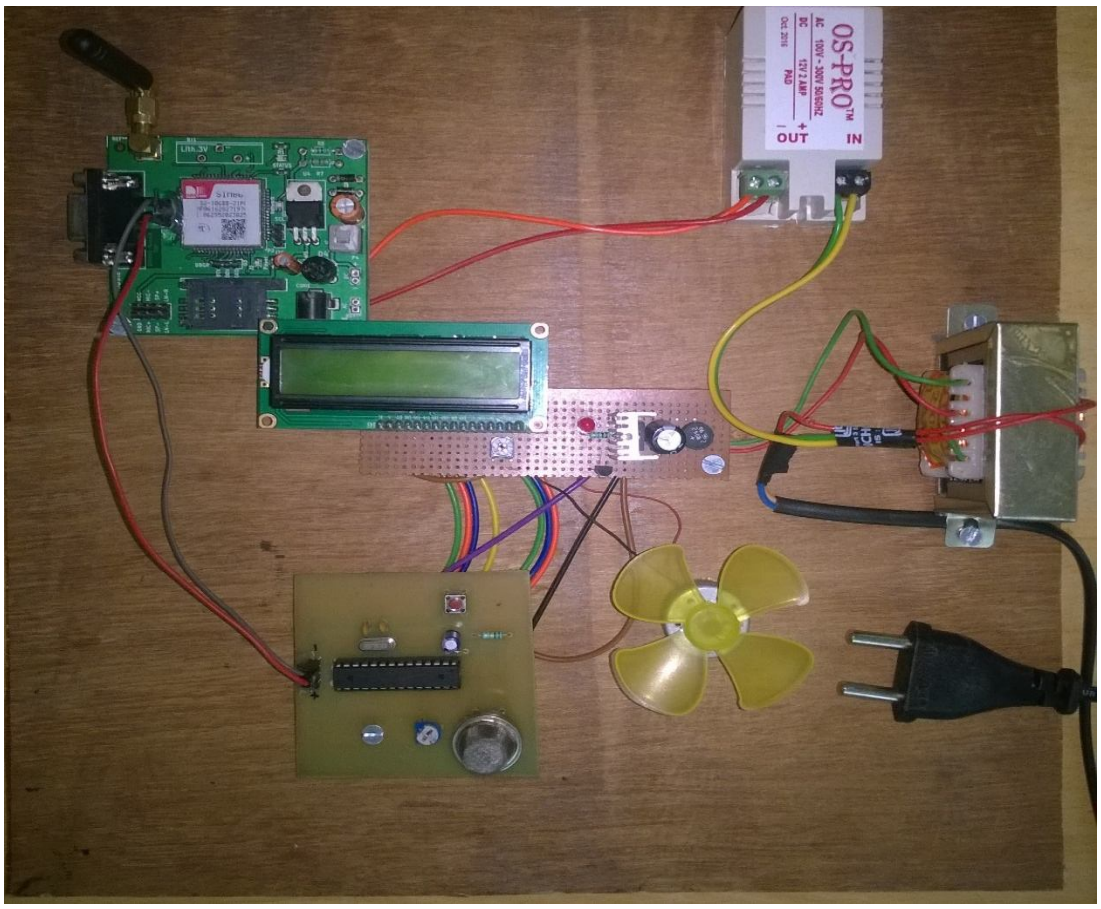

Fig. 2 System Implementation

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V. RESULT

System implementation as shown in fig 2 will generate result in form of message and in form of display in LCD 16*2 display as shown in fig 3 and fig 4.

Fig. 3 Output in form of SMS

Fig. 4 Output in LCD display

When gas will exced its value system will start exhaust fan as shown in fig 5 and provide alert through SMS as shown in fig 3

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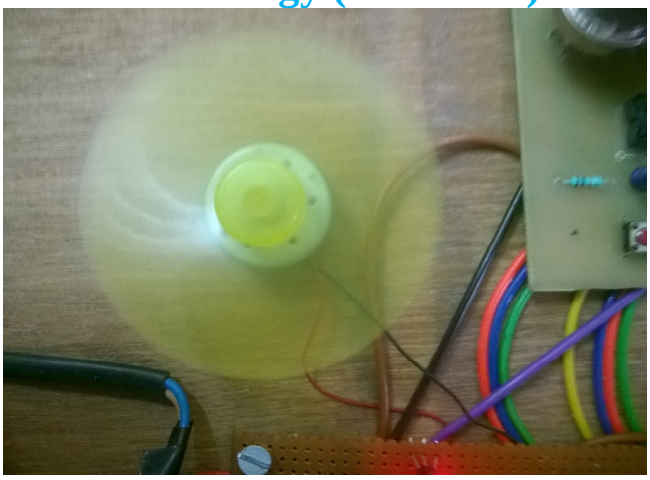

Fig. 5 Exhaust fan removing gas

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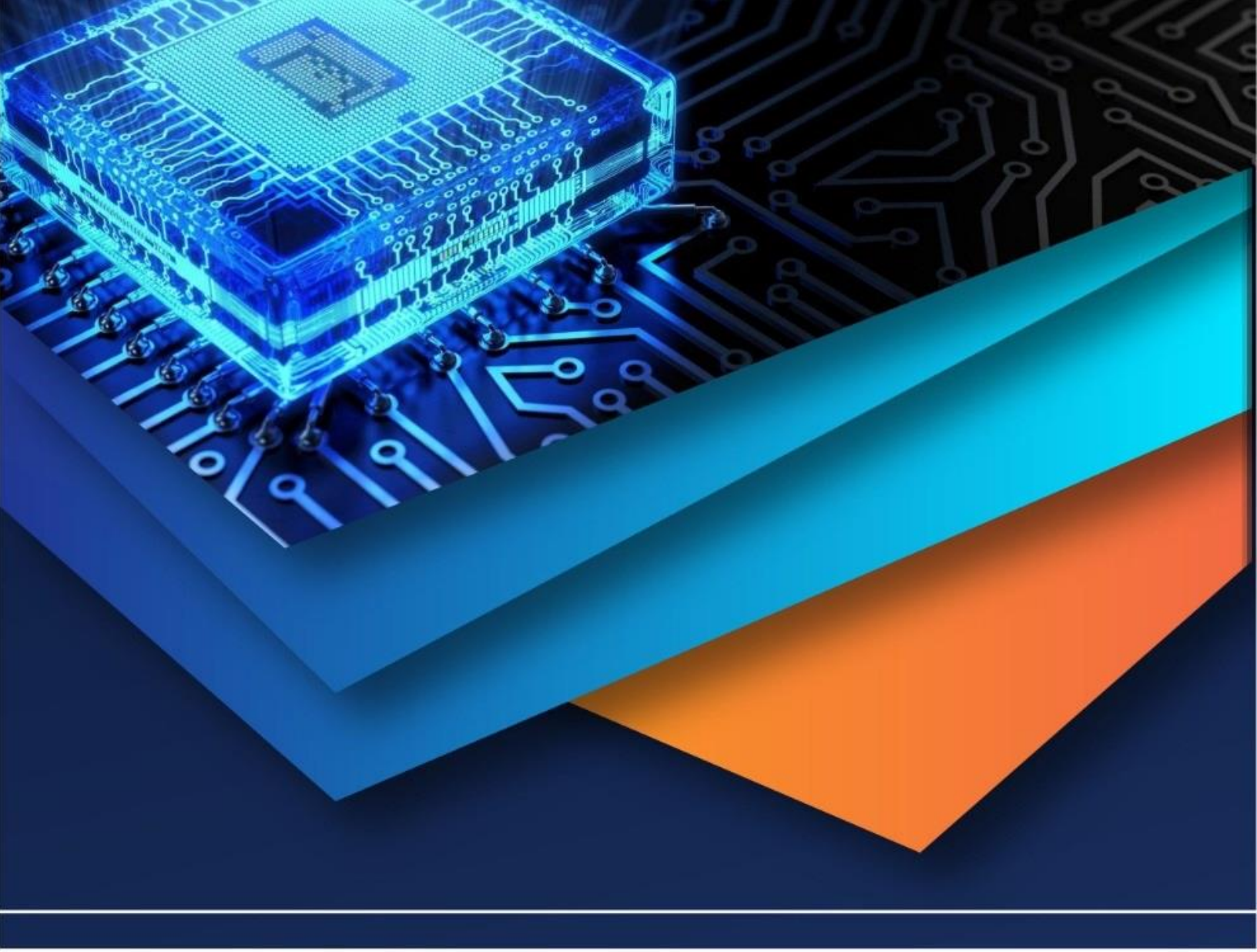

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