

Ideation Phase

Literature Survey

Date	18 September 2022
Team ID	PNT2022TMID47483
Project Name	Gas leakage monitoring and alerting system for industries
Maximum Marks	2 Marks

INTRODUCTION

The Internet of Things (IoT) aims to automate the lives of the world by giving the path with or without human interference which will automate the tasks which may be bigger or smaller than we encounter. Because the Internet of Things (IoT) intends to simplify working, it is also practical to use well-being to reinforce present security standards. The essential goal of every project has not gone ignored by IoT. In open or closed situations, gas leakage may be savage. While traditional gas detection systems are noiseless and accurate, they are unaware of a few key aspects in the area of warning people of a leak. As a result, we have built the implementation for both industry and the society which will detect the leakage of gas and also monitor the gas availability. Alerting techniques that include sending messages to the applicable command as well as the ability to analyze sensor reading data. These days, gas leakage and detection are major concerns in our daily lives. LPG gas is very burnable, posing a risk to both people and property. To avoid such accidents, a notable amount of try has gone into developing reliable systems for detecting gas leaks. Our significant objective is to recommend a gas detection that includes gas leakage detecting hardware to households in the area. This can monitor dangerous chemicals in the air at workplaces and it may also be used in households by alerting through an LCD and sending a message to a recorded phone number. Keywords: LPG-Gas Sensor, Node-MCU, Smartphones, IO

1. Shruthi Unnikrishnan,1 Mohammed Razil, Joshua Benny, Shelvin Varghese and C.V. Hari, Department of Applied Electronics and Instrumentation Engineering, Rajagiri School of Engineering and Technology, Rajagiri Valley, Kakkanad, Kochi, India.

In this paper they measure the amount of gas mixed in the air to sense the leakage, the leakage is also confirmed by the reduced pressure and weight with the certain sensors. The presence of LPG in concentrations from 200–10 000 ppm. The sensor has an outer membrane coated with Tin Dioxide (SnO₂). Upon contact with the components propane and butane, in LPG,

this coating reacts with them and results in an output which is converted into an electrical voltage. And then this electrical voltage is responsible for the alerting.

2. Makiko Kawada, Tadao Minagawa, Eiichi Nagao, Mitsuhiro Kamei, Chieko Nishida and Koji Ueda, Mitsubishi Electric Corporation.

This paper introduces a high-performance gas pressure sensor with high sensitivity and stability, and describes the methodology used in improving the accuracy of measured gas pressure by means of eliminating the influence of external disturbances. A yearlong test of the system, which consists of a new gas pressure sensor and calculation algorithms, was carried out on an 84kV GIS in the field. The system demonstrated its sufficient performance for the detection of the slow leakage of 0.5 % per year, which is maximum allowable value of leakage for GIS.

3. Abhijeethrathi et.al (2013); introduced a golem based on automatic gas detection and indication golem. They planned image depicts a mini mobile golem that is capable to observe gas leak in unsafe places. Whenever there's an occasion of gas leak during a specific place the golem instantly scan and sends the information to golem mobile through wireless communication like Bluetooth. We have a tendency to develop a golem application for golem primarily based good phones which may receive knowledge from golem directly through Bluetooth. The applying warns with a sign whenever there's an occasion of gas leak and that we can even management the golem movements via Bluetooth by exploitation text commands yet as voice commands. The previous mobile robots a supported heterogeneous technologies like GSM, GPS, net primarily based etc., however the most disadvantage of these prototypes was the absence of communication specially areas. So, with the speedy developments and tremendous changes in technology we've ample techniques to eradicate previous issues. Wireless communication protocols play an important role in gift trends. Bluetooth, Wi-Fi, Zigbee etc., we have a tendency to use one among the simplest feature of good phone, i.e., the Bluetooth technology to regulate and monitor parameters driven by a golem [3].

- 4 . J.Vijayalakshmi, Dr.G.Puthilibhai, S.R.Leoram Siddarth, West Tambaram, Chennai.

This paper implements the ammonia gas leakage detection via a monitoring system with the help of ammonia gas sensor (MQ135), using the concept of the Internet of Things. Ammonia Gas sensor (MQ135) sense and detect a large amount of ammonia gas present in the lab, industries, factories, health care, etc, High concentration of Ammonia results in blindness, lung damage or death. Whenever ammonia gas reaches a threshold level provided in the MQ135 Sensor, the buzzer in the Ammonia Gas Sensor goes off alerting the officials. Electrochemical sensors measure the partial pressure of gases under atmospheric conditions. The system collects data about the various levels of ammonia gas at various times daily.

4. Rahul Nalawade et.al, (2018); in this paper ARM7 primarily based machine-driven high-performance system is used for LPG refill booking and outpouring detection. That decreases

the outpouring resistance. Microcontroller sends a message “EMERGENCY ALERT: LPG gas outpouring found in your home to needed cell numbers via GSM module and therefore the same are going to be displayed on digital display. This technique detects the outpouring of the LPG associated alerts the patron regarding the leak by SMS and as an emergency live the system can shut down the ability offer, whereas activating the alarm.

5.2019 IEEE 5th International Conference on Computer and Communications
Bing Han, Qiang Fu, Han fang Hou

In this paper they tried to overcome the s of existing leakage monitoring techniques implemented in the natural gas stations. They are high false alarm rate, poor stability, easy to be interfered by background gas, etc. The false alarm r ate can be effectively reduced by simultaneously monitoring the leakage vibration and methane concentration. Results of laboratory tests indicate that the monitoring technology proposed in this paper enjoys such advantages as low cost, easy-to-install and high reliability, and can be extensively applied for monitoring the methane leakage in natural gas stations and valve chambers of long-distance and gathering pipelines.