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Detection of Gas Leakage using Arduino

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ABSTRACT: Many accidents occur in our day to day life like explosion because of LPG leakage one such example is the recently occurred gas leak from the LG Polymers plant in Visakhapatnam which created a deadly disaster. Major harm is caused if gas leakage is not detected early. But now we can detect the gas leakage using the gas leakage detector. In this IOT and Arduino based gas leakage detector, device will get connected to the WIFI module, the minimum and maximum parameter can be set accordingly. Such IOT as well as Arduino based gas leakage detector systems can be installed in homes, hotels, LPG gas storage areas. This device will continuously monitor the level of gas present in the surroundings. While monitoring, if the value of gas in the surroundings exceeds above the predefined limit then the dc fan gets alerted and a pop up message gets alerted automatically to the mobile connected with help of an app. In this device using the Arduino Microcontroller is an exclusive device system that can provide security. This Arduino and IOT based gas leakage detector will help in detecting gas leakage in the surroundings.

KEYWORDS: Arduino, IoT, DC Fan, Message Alert

I. INTRODUCTION

Gas leakage detection is the process of identifying hazardous gas leaks by means of various sensors. The Visakhapatnam gas leak was an industrial accident that occurred at the LG Polymers chemical plant during the early morning of 7 May 2020. Nearly 200-250 families were evacuated from villages in a five kilometre (3.1 mi) radius around the plant. About 300 people were hospitalized, according to a media report. The work in this paper is divided in two stages. 1) Gas- Detection 2) sending the message. Gas detection is done by Gas Sensor. When a gas leakage is detected the dc fan switches on and a pop-up alert to the email address and a notification is sent to the mobile automatically.

II. METHODOLOGY

Hardware kit is built using regulated power supply, Wi-Fi Module, Arduino Nano, relay, DC Fan, DC Motor, LCD and Gas Sensor. Code is written in Arduino IDE for the wi-fi credentials, LCD printer display, message alert and relay fan. Code is written in Arduino IDE for the wi-fi credentials, LCD printer display, message alert and relay fan. When a gas leakage is detected the dc fan switches on and a pop-up alert to the email address and a notification is sent to the mobile automatically.

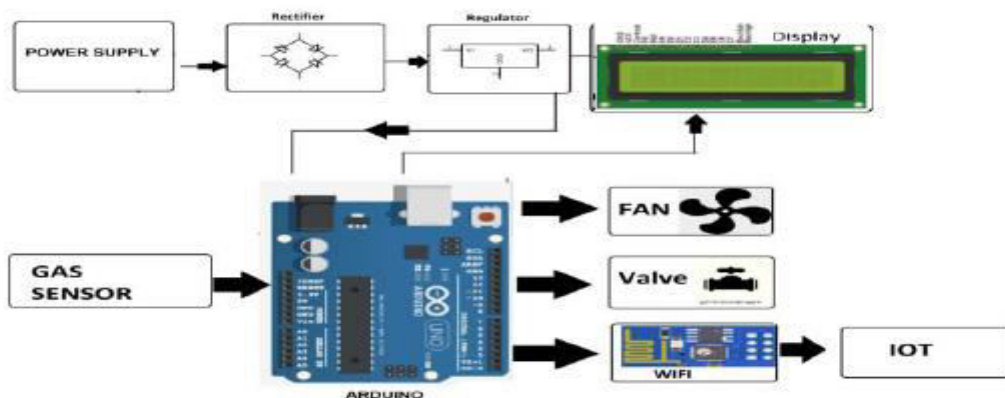


FIG1:Block Diagram



III. EXPERIMENTAL RESULTS

Figures shows the results of Gas detection Device connections and the results which show on LCD when the gas leakage is detected. In fig 1 the hardware connections is shown in fig 2 it shows the output when there is no gas leakage Fig 3 shows the output on Blynk Screen when there is no Gas leakage

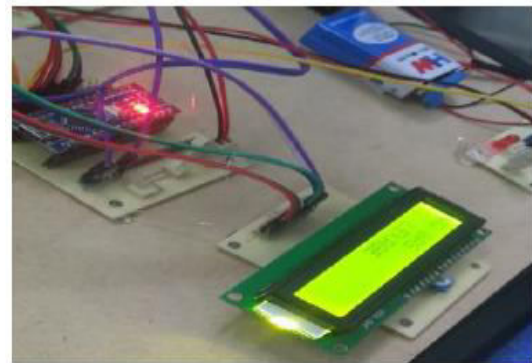
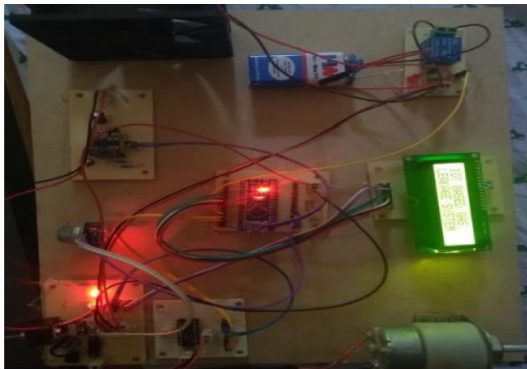


FIG:1 WORKING OF HARDWARE CONNECTIONS FIG:2 OUTPUT WHEN THERE IS NO GAS LEAKAGE

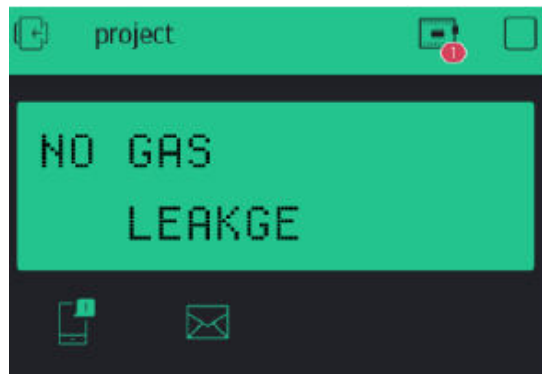


FIG:3 Output on Blynk Screen

When the gas is detected the dc fan switches on and Gas Leakage detected will be found on LCD

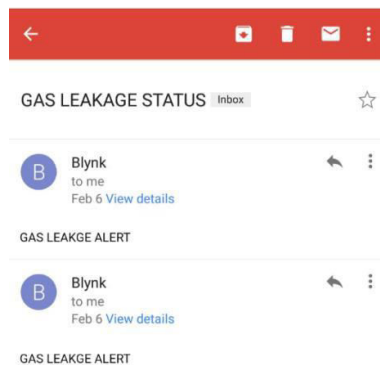


FIG 4:Email Alert Message

As soon as the gas leakage is detected you will receive an alert in both Blynk app in your mobile and to your email address.



IV. CONCLUSION

We have implemented an automatic Gas detection by using a Gas Sensor. The sensor can also sense LPG and coal gas as well as ideal sensor are used to detect the presence of dangerous LPG leak in your car or service station, storage tank environment. This unit can be easily incorporated into an alarm unit, to sound an alarm or give a visual indication of the concentration. The sensor has excellent sensitivity combined with a quick response time.

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