DEVELOPMENT OF ADVANCED LEAKAGE DETECTION SYSTEM USING IOT

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ABSTRACT:- *Real time monitoring of the environment for gas leakages is crucial in industrial applications as they involve the use of toxic and combustible gases. Recently, gas leakage problem is occurred in LG polymers. This is due to improper indication and improper detection system. To overcome this proposed system is implemented.*

In this project advanced gas leakage detection system using IOT is implemented.. The entire system is controlled by the Arduino. When gas is leaked then automatically exhaust fan will be on. Next whenever fire is obtained then fire sensor will be on and automatically sprinkles the water. For both conditions SM will be send using GSM to the corresponding phone number. Hence it can conclude that this project gives effective output.

KEYWORDS:- *Arduino, Gas Sensor, Fire sensor, GSM, RS-232*

INTRODUCTION:-

LPG is a flammable hydrocarbon which is composed of propane, butane, iso-butane and mixtures of these gases. It has high calorific value, which produces less smoke, less soot, and does not cause much environmental damage. Having these desirable properties, leakage of this gas is very dangerous and increases the risks to fire explosion. This leads to both financial and human loss. The number of reports of death due to gas leak explosions has increased in recent years. The reason for such explosions is the lack of substandard cylinders, old valves, worn out regulators and lack of awareness using gas cylinders add to the risks.

The purpose of this project is to detect the presence of LPG leakage as a part of a safety system. Apart from sound alarm, an SMS alert will inform the authorized person and the stepper motor will be triggered to shut down the gas supply to prevent any harmful effects due to gas leakage. Descriptively, we use a gas sensor to monitor the LPG if the gas leak reaches beyond the normal level. The authorized person will be informed about the leakage via alert notification and the gas supply will be automatically shut down. The people can be saved from a potential explosion caused by gas leakage.

PROPOSED WORK:-

The figure (1) shows the block diagram of the proposed system

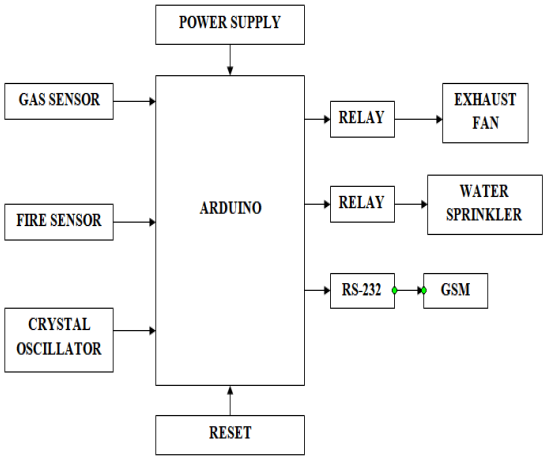


Figure (1):- Block diagram

The above diagram shows the architecture of proposed system.. The entire system is controlled by the Arduino. When gas is leaked then automatically gas valve will be off. In the same way SMS will be send using GSM to the corresponding phone number. Hence it can conclude that this project gives effective output

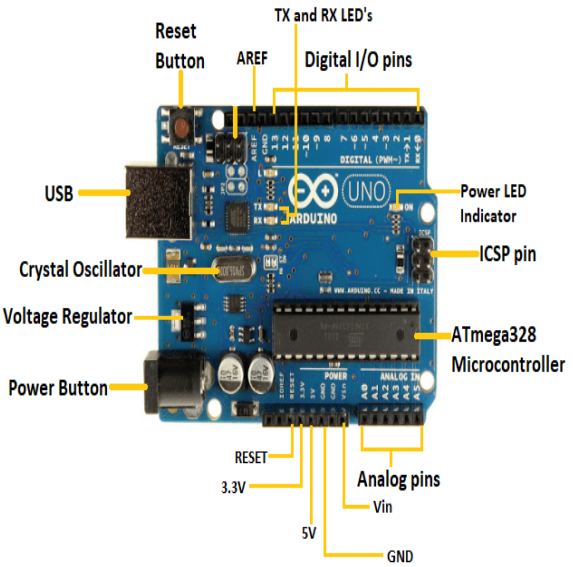
Whenever the gas is leaked then the exhaust fan will be on automatically. In the same way whenever fire is obtained then water sprinkler will be on and sprinkler the water. Message will be transmitted by using GSM whenever exhaust fan and sprinkler will be in active position.

By using this it will saves the lives of human being and hence gives the effective output.

ARDUINO:-

Arduino UNO is a microcontroller board based on the **ATmega328p**.It has 14 digital inputs/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16MHZ ceramic resonator, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started.

"Uno" means one in Italian and is named to mark the upcoming release of Arduino 1.0. The Uno and version 1.0 will be the reference versions of Arduino, moving forward. The Uno is the latest in a series of USB Arduino boards, and the reference model for the Arduino platform; for a comparison with previous version.



SCHEMATIC DIAGRAM OF PROPOSED SYSTEM :-

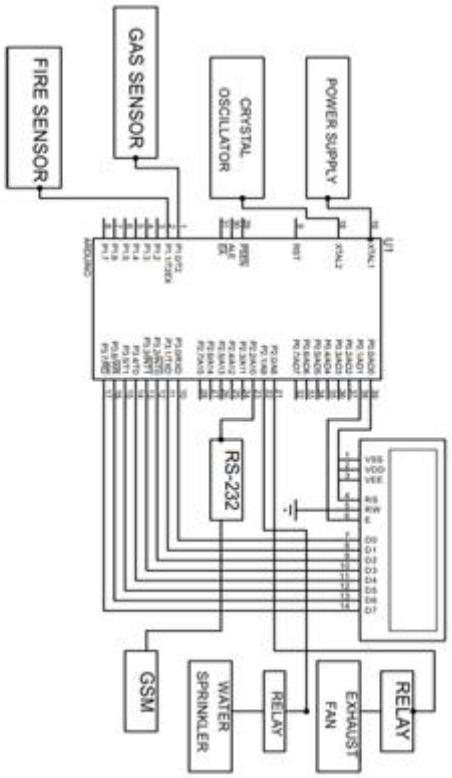
ADVANTAGES:-

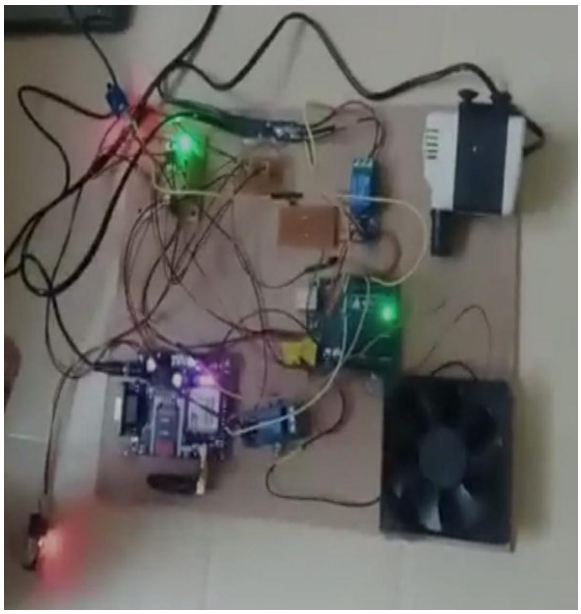
- Detects very fast
- No loss of human life
- Less complexity
- High performance

APPLICATIONS:-

1. Proposed system can be used in educational institutions.
2. This system used in business organizations.
3. This system used in industries.

RESULT:-





CONCLUSION:-

Hence in this project advanced gas leakage detection system using IOT was implemented. By using this project we can avoid the gas leakage problems and also avoid the fire accidents. From the filtered data, some computationally inexpensive, time and frequency-domain features are extracted to be used for the leak detection process.

By using Arduino microcontroller the entire system is controlled. By using gas detection sensor the gas is detected and gas valve will be automatically turned off and sends SMS to the corresponding phone number. Hence this project gives effective results.

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