Industrial Gas Leakage Detecting Robot

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ABSTRACT
Gas Leakages is a noteworthy worry with the modern division, private premises coming about into deadly inferno. Gas spillages prompt different mischances bringing about monetary misfortune and in addition human wounds and/or misfortune. In this venture after the spillage of gas is analyzed, the valve is suddenly shut and along these lines ceasing the spillage. The gas sensor, which has high affect ability to gasses like propane and butane. Gas spillage framework comprises of GSM module, which cautions the client by sending SMS. The work goes for planning a framework that can move puts through a remote (cell phone) control and can espy, caution and limitation gas spillage.

Keywords
Gas Spillage, GSM Module

1. INTRODUCTION
LPG comprises a blend of gasses like propane and butane. These gasses can burst into flames effectively. LPG is utilized as charge, fuel and as a refrigerant. The utilization of melted oil gas (LPG) is quickly expanding in creating nations like India as it delivers low smoke and less ash.

Various research papers have been distributed on gas spillage security framework in which gas sensors are utilized to recognize gas spillage and a reaction circuit is brought on to start a ready method as well as make a move to turn away an occurrence.

There are mainly three units, in this circuit: a sensor unit, microcontroller unit, and GSM. For detecting dangerous & flammable gas leaks in any closed environment such as a car, house, service station or storage tank, a gas sensor is used which detects natural gas,

LPG and coal gas. This sensor can also be used to sense other gasses like iso -butane, propane and even cigarette smoke. This unit can easily be incorporated into an alarm unit to sound an alarm. Keeping in mind the end goal to give high exactness gas sensor MQ-6 has been utilized.

Bhopal gas disaster was a case of gas spillage mishap in India. This was world's most noticeably awful gas spillage mechanical mishap. Gas spillage recognition is critical, as well as ceasing spillage is similarly fundamental. This paper gives a practical and profoundly exact framework, which recognize gas spillage as well as ready (Beep) and kill primary power and gas supplies, and send an SMS. GSM module is utilized which alarm the client by sending an SMS. GSM modem can be designed by standard GSM AT order set for sending and accepting SMS and getting modem status. Depending upon the gas sensor output, the microcontroller can send a message to the authorized. The extra advantage in this module is that the framework can be controlled through a cell phone.

The device performs automated tasks and movements, according to either pre-defined program or a set of general guidelines and direct human supervision. These tasks either replace or enhance human work, such as in manufacturing, contraction or manipulation of heavy or hazardous material. The robot is an integral part in automating the flexible manufacturing system that one greatly in demand these days. Robots are now more than a machine, as robots have become the solution of the future as cost labor wages and customers demand. Research and development of future robots are moving at a very rapid pace due to the constantly improving and upgrading of the quality standards of products.

2. EXISTING METHODOLOGY
In the current strategy, diverse gas detecting innovation is utilized. The semiconductor sensor recognizes the LPG gas spillage. These days gas spillage mishaps happen extremely normal. The primary reason of these mishaps is the spillage of LPG. As of now, there are a few sorts of remedial measures, for example, when the spillage is identified; the message is sent to the fire station and the proprietor. The other remedial measure is that when the spillage is distinguished, debilitate fan is exchanged on. The principal specified technique has the detriment that there is no control move made, it needs a manual controlling which places a human into the direct hazard. The second strategy has the impediment that if the wiring of the fumes fan is not legitimate then it will bring about quick blast because of the stream of AC. In all these said strategies above, there is just discovery no control move is made. In the current techniques, the sensor must be settled at particular spots. There is no development of the framework.

3. PROPOSED METHODOLOGY
The proposed system is controlled using a smartphone to get to places identify the spillage points. In addition, as soon the leakage is detected it automatically turns off the power mains and supply lines to prevent further loss. In addition, it simultaneously informs the concerned person about the leakage by sending an SMS to the concerned person and beeping a caution to alarm the neighboring persons about the leakage.
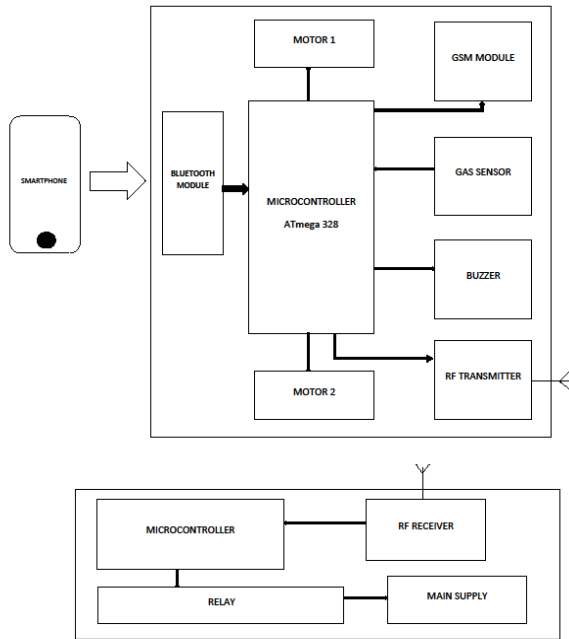
4. PROPOSED BLOCK DIAGRAM

Fig. 1 Block Diagram of an Industrial Gas Leakage detecting Robot

5. WORKING PRINCIPLE

Fig.1 shows the block diagram of Gas Leakage Identification System. In the initial step, the user sends commands from the smartphone to the vehicle to move it in some particular bearings or looking over an obscure place. For sending commands from the smartphone, a fundamental android application is manufactured utilizing MIT App Inventor, which can be upheld over all forms of android.

The Gas sensor MQ-6 identifies the gas spillage. This identifies the gas spillage and gives the flag to the microcontroller with the assistance of ADC. The microcontroller gets the flag, sent by the gas sensor. It sends initiation flag to the next outer gadgets connected to it.

The GSM module is enacted, which sends SMS to the client. The RF transmitter is utilized to send a flag to RF collector at the principle supply end. The RF collector flags the Microcontroller (at the principle supply) end to remove the primary supply of gas through a transfer.
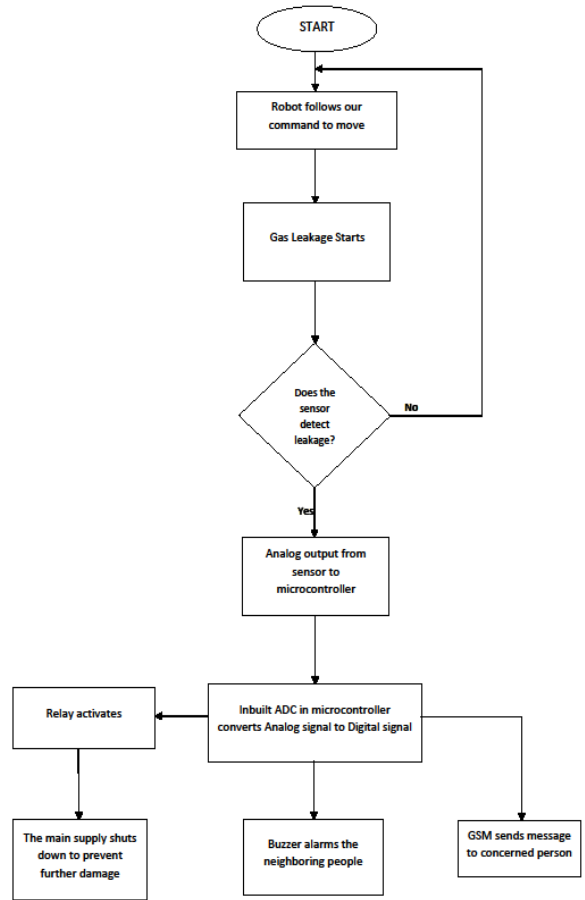
6. FLOWCHART

Fig 2. Flowchart showing working of an industrial gas leakage detector

7. APPLICATIONS

The robot discovers its application in modern and household local locations also. In businesses, the robot can be utilized to screen the gas supply pipelines. It keeps the individual to come in direct contact with the hurtful gasses. In household territories, the robot can screen the primary supply lines to caution us about the LPG spillages and kill the fundamental supply along these lines keeping any real mishaps.

8. ADVANTAGES AND ISSUES

The proposed framework decreases labor for persistent observing of the gas supply lines. It additionally keeps the individual to not to experience the unsafe gasses. Moreover, a solitary vehicle can screen long pipelines. Auto closed down of mains when a spillage is identified keeps from further harm. The buzzer present alarms the neighboring individuals.

Everything has a negative viewpoint. If there should arise an occurrence of this model, it is controlled with batteries, which is somewhat costly. It can be fathomed by utilizing by utilizing elective power source like solar power. Advance a man is required to ceaselessly screen the vehicle for its development. In addition, the range of the Bluetooth module utilized is less. It is enhanced by utilizing a superior Bluetooth module.

9. RESULTS AND DISCUSSION

The model is successfully tested for movement as per the instructions from the user. The model is able is detect the gases like LPG, and petrol. After the discovery the model effectively switches of the fundamental supply (demonstrated here as a fan turning) and sends a SMS to the concerned individual.

However, the model was tested in indoor conditions. The effect outside environment is unknown. The impact outside condition is obscure. Additionally the development of robot was tried on level surfaces. Non level ways might be a worry. The model can be enhanced to be computerized so it does not require a man to control it. It can be altered to send the pictures of the influenced place. In addition, the intensity of gas spillage can also be sent.
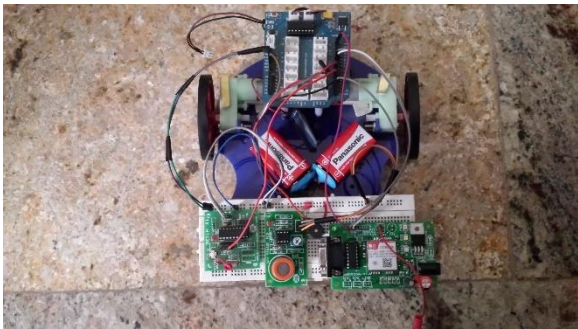

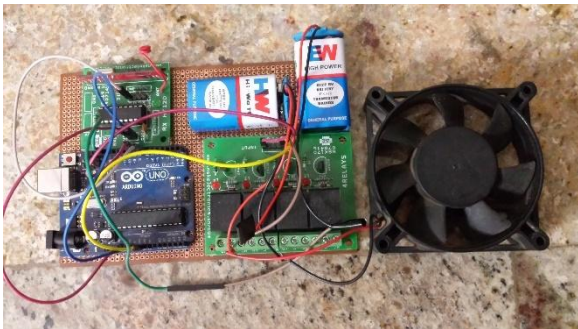**Fig 3. Industrial gas leakage detecting robot**

Fig 4. Main supply cut off unit

10. CONCLUSION

Gas spillages in family units and ventures make chance life and property. A huge loss has to be incurred for the accident occurred by such leakages. A solution to such a problem is to set up a monitoring system, which keeps on monitoring the leakage of any kind of flammable gasses and protects the consumer from such accidents. The present paper provides a solution to prevent such accidents by not only monitoring the system but by also switching off the main power and gas supplies in case of a leakage. In addition to this, it activates an alarm as well as sends a message to the user. It also turns off the exhaust fan indicating the switching off the main supply.

11. REFERENCES

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