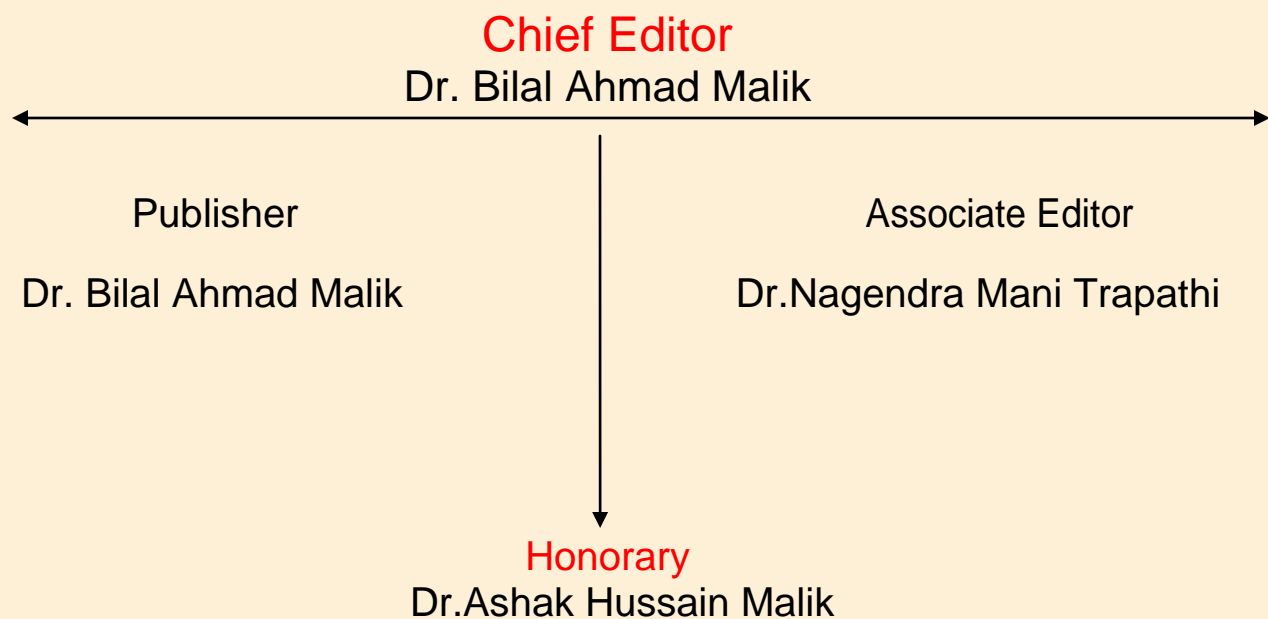


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SMART BOOKING WITH LIFE SAVER SYSTEM

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Abstract: *This paper deals with automatic detection and control of LPG leakage. All the existing systems deal about the detection and intimation to the authorities of the leakage but no control action is taken. This system overcomes this serious drawback and it controls the leakage by closing the valve directly in case of a leakage. It controls the automated action in case of a leakage & device which will shutdown the electric power to the house as well as open the kitchens windows. We are sending the gas leakage information to gas agency as well as owner. At last the awareness system is provided for alerting*

Keyword— Solar Panel, DC Motors, Microcontroller, GSM, Relay.

INTRODUCTION

Domestic LPG explosions cause damage to both human life and properties. Nowadays LPG accidents occur very common. The main reason of these accidents is due to the leakage of LPG. This leakage of LPG starts when we forget to close the main regulator valve. This is the basis of these kinds' of

accidents. Already there are some sorts of remedial measures such as when the leakage is detected; message is sent to the fire station and the owner. The other remedial measure is that when the leakage is detected, exhaust fan is switched on. The first mentioned method has the disadvantage that there is no control action taken, it needs human intervention again and putting human to direct risk. The second method has the disadvantage that if the wiring of the exhaust fan is not proper then it will cause immediate explosion since it deals with the AC. In all these mentioned method there is only detection not control action taken. To overcome these sorts' of disadvantages we proposed a system which would take the control action as well as the detection action. The proposed system takes a automatic control action after the detection of LPG leak of 0.001%. This automatic control action provides the closing of valve by a mechanical handle. Next by using a GSM we are sending the message to the fire station. At last the buzzer is provided for alerting the neighbour's about the leakage.

BLOCK DIAGRAM

GAS SENSOR:-

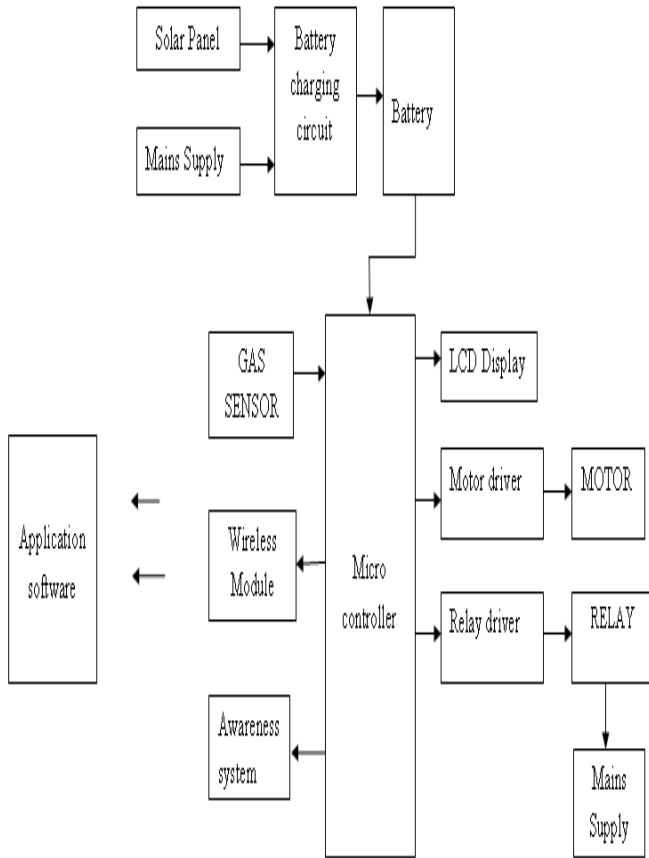


Fig. Block diagram of system

LCD:-

In this project, LCD's are very simple to interface with the controller as well as are cost effective. The LCD requires 3 control lines (RS, R/W & EN) & 8 (or 4) data lines. The number on data lines depends on the mode of operation. If operated in 8-bit mode then 8 data lines + 3 control lines i.e. total 11 lines are required. And if operated in 4-bit mode then 4 data lines + 3 control lines i.e. 7 lines are required.

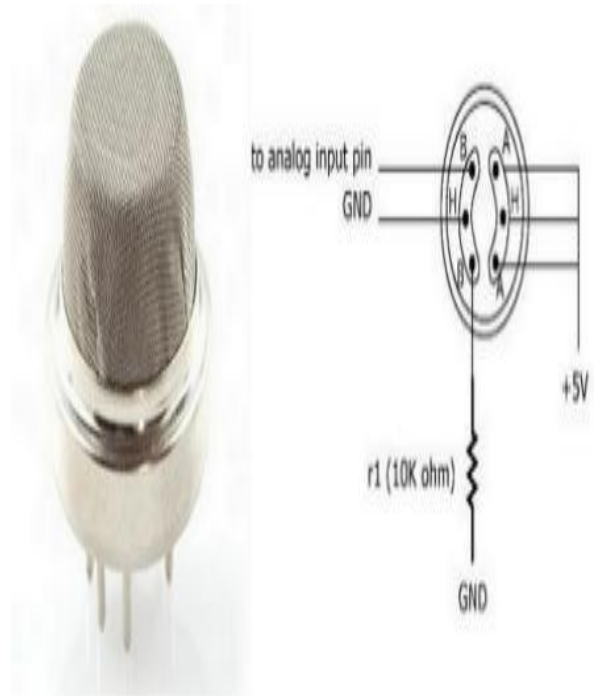


Fig. Illustration: MQ-6 Gas sensor

MQ-6 gas sensor modules are used in gas leakage detecting equipments in family and industry, are suitable for detecting of LPG. This is a simple-to-use liquefied petroleum gas (LPG) sensor, suitable for sensing LPG concentrations in the air. In our project use MQ-6 as gas sensor. If gas is detected by the sensor ADC calculates how much amount of gas present in the air. If it is found a larger amount microcontroller switch on relay.

GSM MODULE:-

Global System for Mobile Communication. Global system for mobile communication (GSM) is a globally accepted standard for digital cellular communication. GSM is the name of a

standardization group established in 1982 to create a common European mobile telephone standard that would formulate specifications for a pan-European mobile cellular radio system operating at 900 MHz. The SIM300 is a Tri-Band/Quad-Band GSM/GPRS solution in a compact plug-in module. The leading features of SIM300/340 make it ideal for application, such as WLL applications and handheld devices. An embedded Powerful TCP/IP protocol stack.

RELAY:-

Relay acts as a switch which is used to control the 230 volt AC supply. This relay will be turned off if there is no person inside the room. This relay can be used to turn off the electrical appliances like fan, tubes etc.

RELAY DRIVER CIRCUIT:

Relays are components which allow a low-power circuit to switch a relatively high current on and off, or to control signals that must be electrically isolated from the controlling circuit itself. To make a relay operate, we have to pass a suitable pull-in and holding current (DC) through its energizing coil. And generally relay coils are designed to operate from a particular supply voltage, often 12V, in case of many small relays used for electronics work.

We have to provide enough base current to turn the transistor on and off. NPN transistor BC547 is used

to control a Relay with a 12V coil, operating from a +12V supply. Series base resistor R1 is used to set the base current for transistor, so that the transistor is driven into saturation (fully turned on) when the relay is to be energized.

BATTERY:-

Batteries store energy being produced by given generating source and when this source is unavailable this energy can be used by loads. The inclusion of storage in any energy generating system will increase the availability of the energy. Operating voltage of battery is 12v dc.

MAX232:

MAX232 IC is used for serial communication. MAX232 is compatible with RS-232 standard, and consists of dual transceiver. Each receiver converts TIA/EIA-232-E C levels into 5V TTL/CMOS levels. Each driver converts TTL/COMS levels into TIA/EIA-232-E levels.

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DC MOTOR:-

DC Motors is 60 RPM 12V DC motors and 5 kg cm torque and No-load current = 60 mA (Max) and Load current = 300 mA (Max)

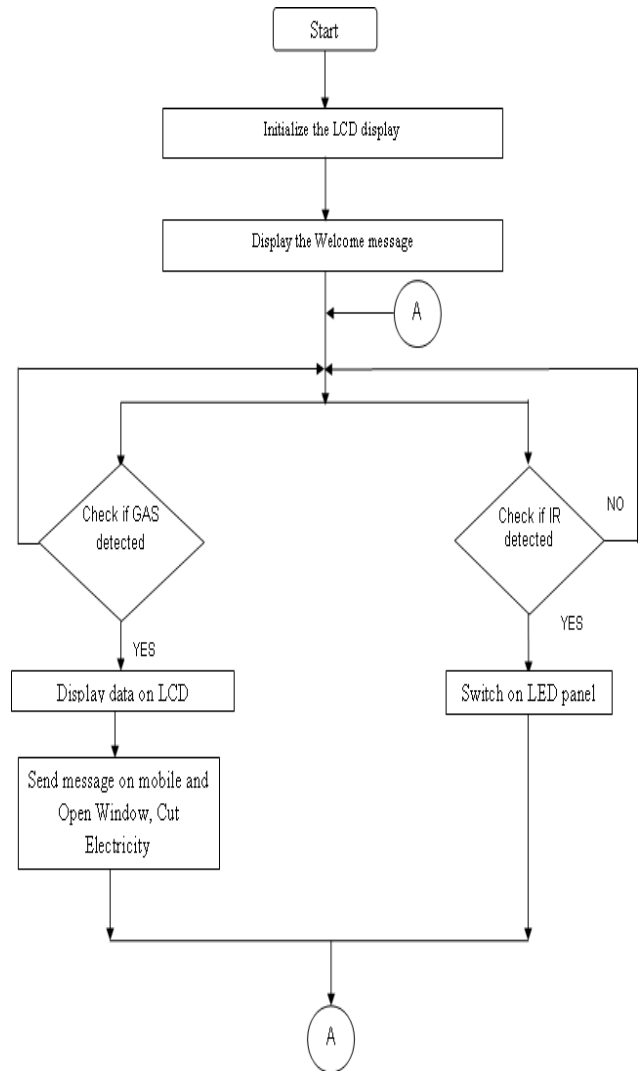
DC MOTOR DRIVER:-

The L298 is an integrated monolithic circuit in a 15-lead Multi-watt package. It is a high voltage; high current dual full-bridge driver designed to accept standard TTL logic levels and drive inductive loads such as relays, solenoids, DC and stepping motors. Two enable inputs are provided to enable or disable the device independently of the input signals.

METHODOLOGY

When the leakage of LPG has started, the proposed system senses the leak by means of a mq6 after sensing the sensor's output is given to the analog to digital converter then this value is given to the controller where the program is given for checking the leak condition. The value of minimum and maximum leakage is given in terms of hexadecimal or binary form. Then this value when it is detected either as maximum or minimum value then the instruction is given to motor to open windows. Driving the motor through the driver IC. Then after controlling the leakage message is sent to fire station by means of GSM then the buzzer alert is given to the neighbour and electric power supply is shutdown by means of a relay.

FLOCHART:-



CONCLUSION

When the gas is detected windows get opened. Also as soon as gas is detected mains are cut automatically. With this, a text message is sent to the gas agency, Government & fire brigade. Although the system is certain amount costlier than the existing one & it has more advantageous functions than the other systems present. This system is very easy to install and is also portable.

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