

Automatic LPG Gas Cylinder Booking Software and Weight Measurement Using Load Cell & GSM.

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Abstract : Liquefied petroleum gas (LPG) is the most important part of domestic daily human life but the safety of human life is required for gas explosion.this methodology are used to gives the protection to human life.when there is a gas leaked by using automatic indication.it also provide the feature for automatic LPG gas booking when owner is busy and measure continues weight of LPG cylinder using load cell.

Keywords: ARM7 microcontroller,LCD display,GSM module,Load cell,MQ6 gas sensor.

I. Introductions

LPG gas mostly used in domestic application but few days the domestic survivance or explosion of gas are increased this explosion of gas are very dengoures for the society.

The LPG gas booking and weight measurement unit gives visual indication of gas leakage and continuously measure the weight of cylinder as well as display this weight on LCD display.When weight below reference value owner side GSM modem send the booking message to the agency and agency gives the feedback message to the owner. When owner is absent in home and gas was leaked then GSM send the gas leaked message to the owner and buzzer or exhaust fan automatically on.

II. System Overview

1.1 Block diagram

We analysis the system design in two section one is the cylinder user and second is the agency side. We are using the arm 7 controller which will monitor the weight of the LPG after monitoring if weight is below fixed point it will send the message to the gas agency and gas agency will send the return message that gas booking is done.

Agency side

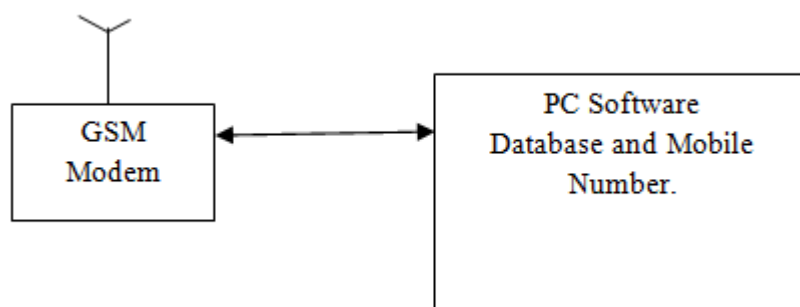


Fig.2.1 -Block diagram indicates Agency side.

Cylinder user

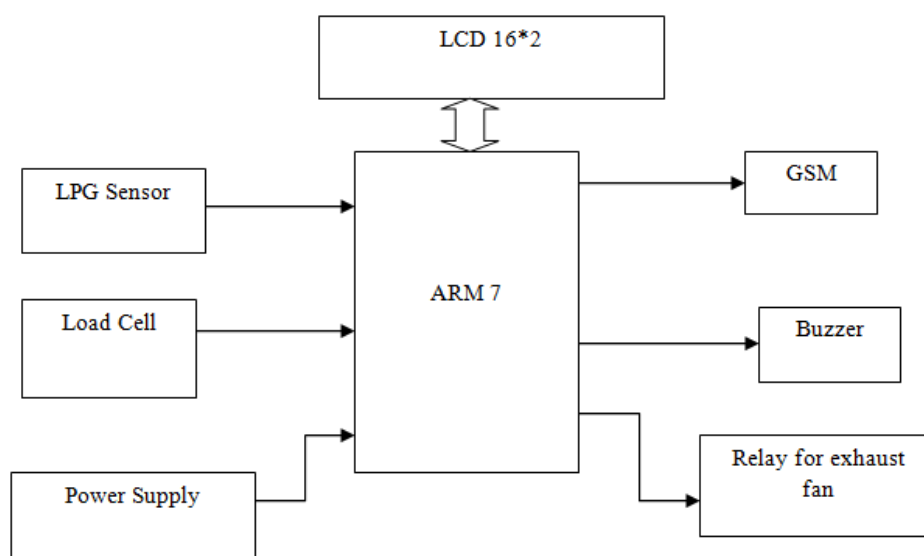


Fig.2.2-Block diagram indicates cylinder side

2.2 Weight sensor: We have used strain gauge as a weight sensor. The function of strain gauge is to give output voltage as per the force/weight applied to it. Sensor converts the applied force into corresponding electrical signal. The output of weight sensor is in analog form. It is given to a Digitizer board which comes with this weight sensor. Function of Digitizer board is to give digital output which is proportional to analog input received from weight sensor. This digital output is given to microcontroller for further processing. We have used a weight sensor of 40 kg capacity. So 40 kg is the maximum weight that can be applied to this weight sensor.

2.3 LPG gas sensor: It is used to detect LPG gas leakage, which is proportional to the LPG gas sensed. MQ 6 Gas sensor is used as LPG, Butane and Propane Sensor to generate alarm when there is leakage of these gases from the source. MQ6 is a highly sensitive gas sensor to petroleum based gases but less sensitive to Alcohol and Carbon di oxide. This simple sensor can be installed in the kitchen to give warning alarm if there is leakage of LPG.

2.4 GSM Modem: This is one of the important blocks in our project. GSM modem is used for sending SMS so that user can get remote indication. GSM modem is used to send SMS to user about the situation of gas cylinder like threshold is cross or gas level is 20%, gas level is below 5%. Microcontroller communicates with GSM modem and sends commands to GSM modem. Thus a text SMS is sent to the owner of the gas cylinder.

2.5 Buzzer: Buzzer is used to indicate the user about the threshold level. Buzzer is provided with this system which is turned on after LPG gas leakage. Then the people near gas cylinder come to know about the status of the gas.

2.6 LCD Display: We have also provided Liquid Crystal Display (LCD display) to this system. We have used 16*2 alphanumeric displays. LCD display shows actual weight of the gas and at the same time it shows various status messages like "Sending SMS", "SMS sent" and "Gas has reached to 20% value" or "Gas has reached to 5% value". All these kinds of messages are shown on the LCD so that person operating this project can read these messages. LCD display is useful in testing purposes as well.

2.7 Software Flowchart

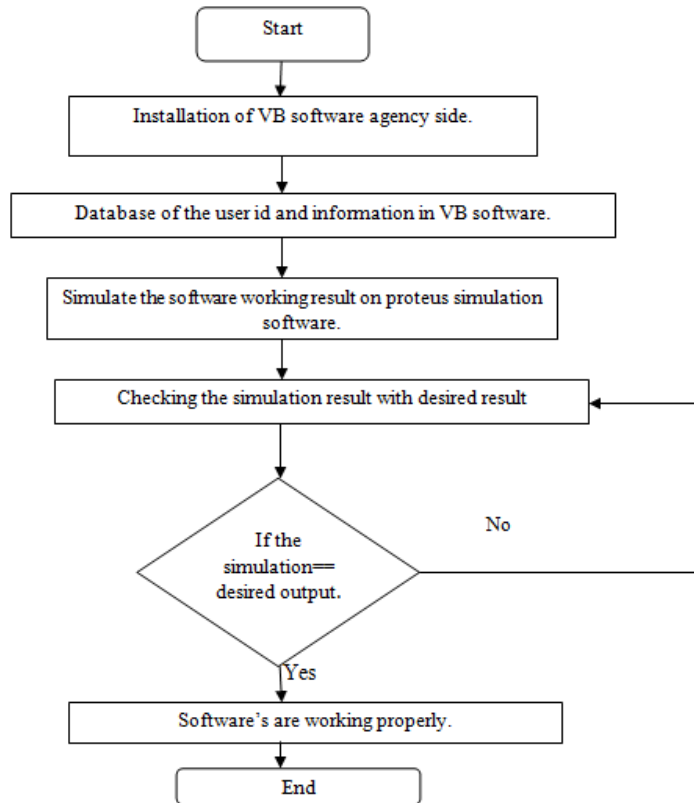


Fig.2.3-Software flowchart

2.8 Hardware Flowchart

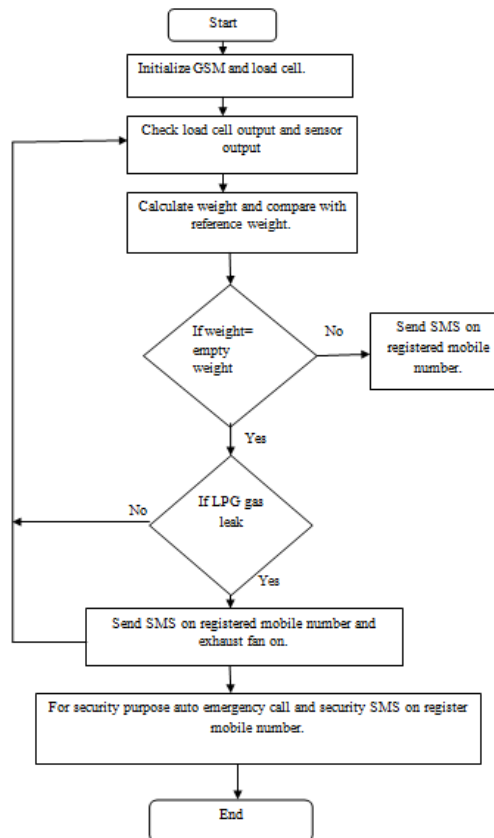


Fig-2.4-Hardware Flowchart

III. Application

In gas numbering. In Domestic use. In hotels.

IV. Advantages

Safety and security. In the home to prevent the explosion of gases. To avoid the frequently checking the gas manually.

V. Conclusion

We have studied and completed the design of LCD display interfacing also studied load cell, MQ6 gas sensor, M95 qutel modem, buzzer with ARM 7 microcontroller and simulated it using proteus software and actual work of project simulation result is observed and studied. also complete the work of project to required output.

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