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LPG Gas Level Automatic Monitoring and Booking System

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Abstract: *Over the last few years, there has been a fast evolution in technology which has made human life tranquil in several aspects. LPG is needed everywhere and is widely used for cooking. Some of the habitual issues experienced during its usage are, the gas cylinder going abandoned while peak cooking hours, the incognizance of the current circumstances of gasoline present in the container, and the negligence to prophesy the working days of the LPG cylinder once installed. Outright these lead to disruption in its use. To deal with this tight spot Smart Gas Kit is ideology to put forward. For the most part emphasis on the application of the IoT used for measuring and publicizing the gasoline content existing in household LPG cylinders and automatic booking of a new LPG cylinder. The auxiliary prerequisite of the system also involves prophesying the working days of the gasoline content. The ceaseless weight measurement of gas regularly is done using a load cell associated with a microcontroller. The current circumstance and the booking notifications are broadcast to the user on their mobile phones via a Bluetooth module. The complete constitution work towards making the LPG chamber booking system more automized without any human intervention.*

Keywords: Leakage, Load Cell, Gas Sensor

I. INTRODUCTION

LPG cylinder plays a significant role in our routine life. A weight sensor, gas sensor, temperature, and humidity sensor are used to provide the survival and security for leakage of LPG cylinder. Automation of LPG gas booking system is effectuated using Android app and IoT. LPG is extensively used in households, but the consumer is unaware of the daily rate of exhaustion and the time frame when someone needs to book and replenish in a busy schedule. Gas leakage results in a serious problem in households and other sectors, where household gas is used. In this project, an IoT-based system monitors different aspects related to the LPG cylinder, and by that keeps the consumer updated through the mobile application.

II. PROPOSED FRAMEWORK

To defeat the issue this proposed framework is utilized here to beat the issues that happened in the current framework and do the capacities like recognizing the gas level of the chamber whenever the gas level isn't the edge regard, customized booking is done. Right, when the gas starts to deliver the solenoid valve subsequently close, and a message is transported off the client through a flexible and simultaneous signal. The entire system is executed by a code that is inbuilt into the microcontroller. A definitive point of the proposed framework is to make the programmed LPG gas checking and booking framework more automized without the assistance of people.

III. METHODOLOGY

This project has two parts:

One-part deals with the percentage of gas remaining in the cylinder which is found using a sensor called load cell and it is updated continuously to the mobile that is being used by the user when the gas level is less than the threshold value then the notification will be given to the user through the LCD, and booking is done automatically through the mobile device.
The second part deals with leakage detection. When the leakage is detected by the gad sensor, it switches the relay connected to the solenoid valve and turns off the valve. Then the message is sent to the user.

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IV. HARDWARE DESCRIPTION

In Node MCU(ESP8266) device handle all sensors with the help of an IoT server, that provide services and control over the network.

4.1 Load Sensor

A load cell is a transducer that actions power and results from this power as an electrical sign. The heap cells are utilized since it gives precise weight. A strain check is utilized in the vast majority of the heap cells for exact estimation. The driving voltage in the event that the heap is around 5 to 10V. This is utilized to gauge the heaviness of the chamber. The precision rate is under 0.1% of the full scale.

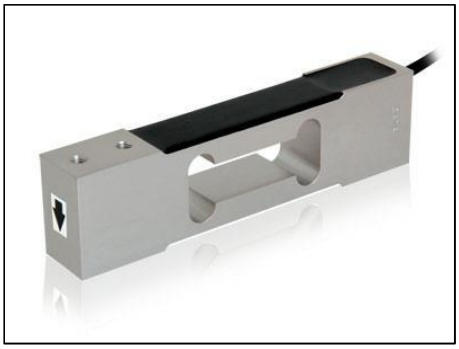

Figure 1: Load Sensor

4.2 Gas Sensor

The Gas sensor (MQ-6) module is valuable for gas spillage location. The responsiveness can be changed by the potentiometer. The touchy material of the MQ-6 gasses detecting component is SnO2, with a lower actual peculiarity in clean air. The actual peculiarity of the detecting component is high once the combustible gas is recognized. The obstruction of the sensor is changed when the vaporous component interacts with the sensor. This change causes the adjustment of voltage. This voltage change can be perused in the microcontroller. There are different awareness values for the different vaporous components.

Figure 2: Gas Sensor

4.3 Mobile Application

MIT App Inventor is a web application that incorporated advancement climate initially given by Google and presently kept up with by the Massachusetts Institute of Technology (MIT). It permits novices to PC programming to make application software (apps) for two working frameworks (OS): Android, and iOS, which, starting on 8 July 2019, is inconclusive beta testing. It is free and open-source programming conveyed under twofold approval: a Creative Commons Attribution Share Alike 3.0 Unsorted grant and an Apache License 2.0 for the source code.

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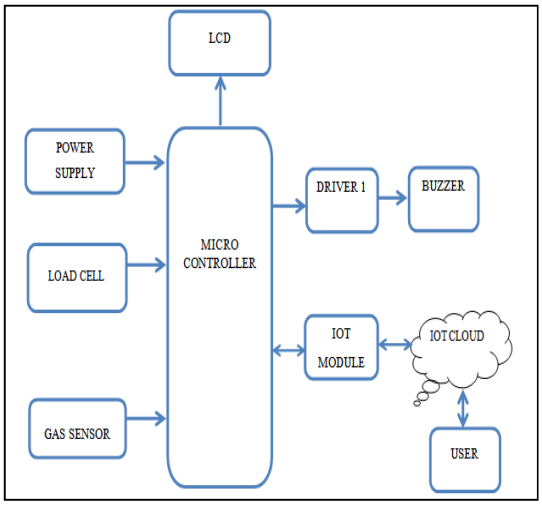
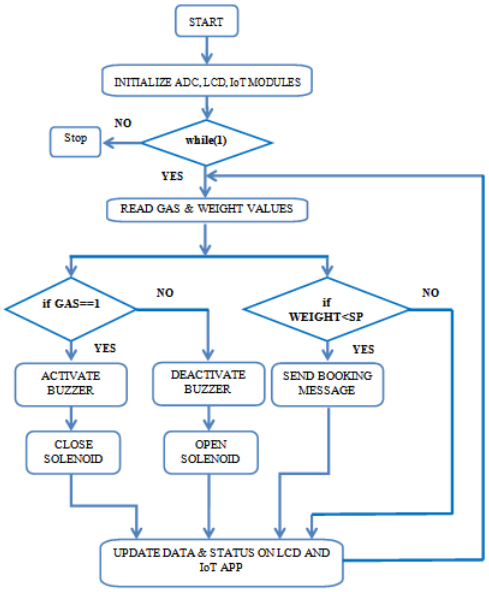
V. BLOCK DIAGRAM



VI. FLOWCHART



6.1 Algorithm

- STEP 1: Power up the system
- STEP 2: Initialize the ADC, LCD, IoT MODULES
- STEP 3: Read GAS SENSOR and LOADCELL values through ADC PORT
- STEP 4: if GAS leakage offers CLOSE the solenoid and prompt the buzzer, else OPEN the solenoid and deactivate the buzzer.
- STEP 5: if WEIGHT is much less than setpoint, ship BOOKING message, else do nothing.
- STEP 6: Update values and standing on LCD & IoT APP. STEP 7: Repeat STEP 3 to STEP 5 continuously.

VII. APPLICATION

1. It can be utilized in Industries, Home, Hospitals, Lab, Gas dispersion chamber and so forth.

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2. Prevent the fire perils and blasts.
3. Supervise gas fixation levels
4. Real time refreshes about spillages
5. Cost-compelling establishment
6. Get quick gas spill cautions

VIII. RESULT

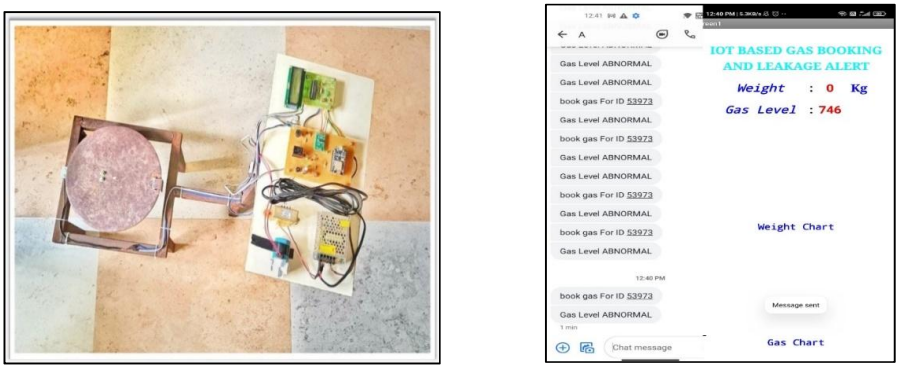

Figure 3: Result

IX. CONCLUSION

A cost-effective gas spillage recognition framework was proposed, planned and effectively executed in this paper. Alongside gas spillage recognition, this framework gives a full computerized approach towards the gas booking. Continuous weight is estimation of the gas and its showcase on LCD makes it an effective home security framework and furthermore can be utilized in the ventures and different spots to recognize gas spills. The expense is associated with fostering the framework is essentially low and is considerably less than the expense of gas finders industrially accessible on the lookout

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X. FUTURE SCOPE

The future degree for IoT has become var in our everyday life. It lessens crafted by people. These days sensors have supplanted the things that humanity needs to do. Here we have utilized the high-level IoT framework. Which is carried out in programmed LPG gas level checking and booking framework. Here the sensor's play had a significant impact and consequently, every one of the systems is finished utilizing IoT.

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