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Gas Booking Using IoT

M.Dhanarasan [1], T.Jothimurali[2], S.U.Manishkumar[3], G.Dineshkumar[4],P.Sakthilakkia[5],

A.Senthilkumar[6], S.Saravanan[7],

UG Scholar, Department of Electrical and Electronics Engineering, Muthayammal Engineering College,

Tamilnadu, India [1,2,3] ,

Assistant Professor, Department of Electrical and Electronics Engineering, Muthayammal Engineering College,

Tamilnadu, India [4,5,6],

Professor, Department of Electrical and Electronics Engineering, Muthayammal Engineering College,

Tamilnadu, India [7]

ABSTRACT: Gas Booking is a major requirement in every individual life. The need of this project is to save time while booking the gas. When we call to the gas distributor our request may not be recorded or call may not be connected. These all waste the person's time. If we haven't noticed the completion of gas we need to book it in black for more money. By this project   the level of gas will be monitored at all the time and we get message when gas is about to complete. In this paper we would like to advocate a micro- controller-based system in which a weight sensor, and load cell are used to discover the weight of the gas present within the cylinder.

KEYWORDS: LCD, Load Cell, Sensor, GSM, Node MCU, Buzzer, Microcontroller, Transformer.

I. INTRODUCTION

The need of this project is to save time while booking the gas. When we call to the gas distributor our request may not be recorded or and commercial propane having saturated in addition to unsaturated hydrocarbons. Because of the flexible nature of LPG, it's far used for many fields along with home gas, commercial fuel etc., LPG is an exponential increase daily. Booking an LPG cylinder now-a-days is just a text call content message. Petroleum businesses have released the customer-friendly service called as IVRS approach for customers. For this reason, the requirement of an effective device to weight and show the quantity of LPG is necessary message when gas is about to complete.LPG, first produced in 1910 with the aid of Dr. Walter.

Completion of gas we need to book it in black for more money. By this project the level of gas will be monitored at all the time and we get spelling is an aggregate of commercial butane call may not be connected .Gas level detections done with various features, here the project is implemented using PIC16F877a and the device will be a single system with multiple application for LPG consumers. The device monitors the load that is gas level and display it within alphanumeric display, the level measurement is done when the gas level is critically low that is below 20%.Then it sends an information to the registered mobile application by IOT with the help of a Node MCU module and the alert database to user is displayed in the system monitor

II. PROPOSED SYSTEM BLOCK DIAGRAM

A power supply is a device that supplies electrical energy to one or more electric loads. The term is most commonly applied to devices that convert one form of electrical energy to another, though it may also refer to devices that convert another form of energy (e.g., mechanical, chemical, solar) to electrical energy. A transformer is a static device that transfers electrical energy from one circuit to another through inductively coupled conductors—the transformer's v coils. A varying current in the first or primary winding creates a varying magnetic flux in the transformer's core and thus a varying magnetic field through the secondary winding. This varying magnetic field induces a varying electromotive force (EMF) or voltage in the secondary winding. This effect is called mutual induction. A rectifier is an electrical device that converts alternating current (AC), which periodically reverses direction, to direct current (DC), which is in only one direction, a process known as rectification. Rectifiers have many uses including as components of power supplies and as detectors of radio signals.
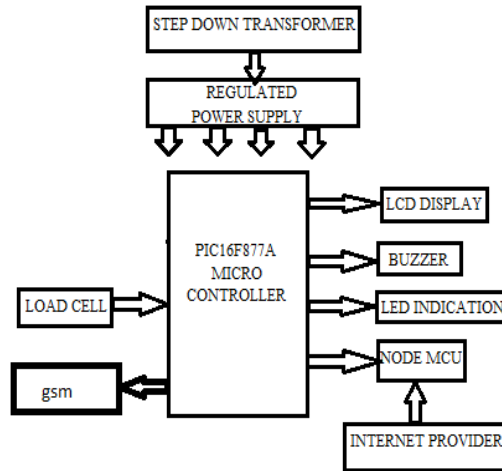
Figure 1. Block diagram

III. WORKING PRINCIPLE

Electronic voltage regulators operate by comparing the actual output voltage to some internal fixed reference voltage. Voltage Regulator (regulator), usually having three legs, converts varying input voltage and produces a constant regulated output voltage. They are available in a variety of outputs. PIC is a family of modified Harvard architecture microcontrollers made by Microchip Technology, derived from the PIC1650 originally developed by General Instrument's Microelectronics Division. The name PIC initially referred to Peripheral Interface Controller PICs are popular with both industrial developers and hobbyists alike due to their low cost, wide availability, large user base, extensive collection of application notes, availability of low cost or free development tools, and serial programming (and re- programming with flash memory) capability.

The European Telecommunications Standards Institute (ETSI) has been the committee driving the GSM technology. The Short Messaging Service (SMS) is used to send text messages from the local transmitter to the remote receiver. The SMS is a feature from the evolution of the GSM standard over a few years into General Packet Radio Service (GPRS) . This was developed to increase the data rate from the original 9600 bits per second up to 40 kilobits per second . The main components of a GSM network are discussed below briefly. Mobile Equipment – The mobile equipment, sometime know as mobile station are the cellular phones. These are the devices handled by the users that generate and consume signals. The most commonly used Character based LCDs are based on Hitachi's HD44780 controller or other which are compatible with HD44580. we will discuss about character based LCDs, their interfacing with various microcontrollers, various interfaces (8-bit/4-bit), programming, special stuff and tricks you can do with these simple looking LCDs which can give a new look to your application. For Specs and technical information HD44780 controller. A load cell is a force transducer. It converts a force such as tension, compression, pressure, or torque into an electrical signal that can be measured and standardized. As the force applied to the load cell increases, the electrical signal changes proportionally.

Node MCU is an open source IoT platform. Which includes firmware which runs on the ESP8266 Wi-Fi Module from Express if Systems , and hardware which is based on the ESP-12 module. The term "Node MCU" by default refers to the firmware rather than the dev kits. Node MCU firmware was developed so that AT commands can be replaced with Lua scripting making the life of developers easier. So it would be redundant to use AT commands again in Node MCU. MPLAB IDE is a Windows Operating System (OS) software program that runs on a PC to develop applications for Microchip microcontrollers and digital signal controllers. It is called an Integrated Development Environment, or IDE, because it provides a single integrated "environment" to develop code for embedded microcontrollers.

A.   Load Cell
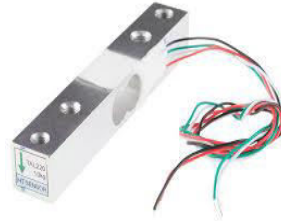
Load cell is a sensor or a transducer that converts a load or force acting on it into an electronic signal. Resistive load cells work on the principle of piezo-resistivity. When a load/force/stress is applied to the sensor, it changes its resistance

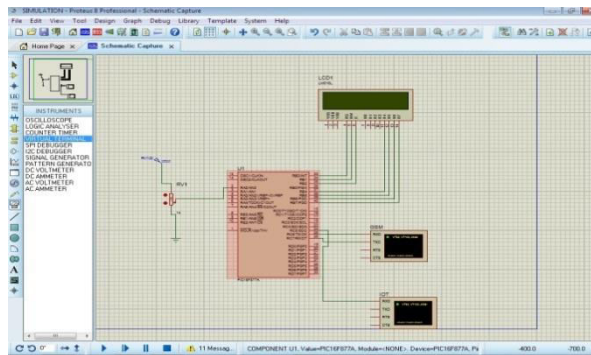## IV. SIMULATION PROTOTYPE

Figure 3. Simulation Results

The figure shows the load cell measure the weight of the gas cylinder and the LCD display is used to display the weight of the gas cylinder.

V. HARD WARE IMPLEMENTATION

The Design of gas booking system is connected to IOT. The system has a sensor which monitored by the sensor externally. It gives the status of the amount of gas present in the cylinder. It is connected to the step down transformer. which is used to provide low voltage value then connected to the regulated power supply. It used for Alternating current in a constant then connected to the PICISF877A micro controller to the load cell which load all is used for measure weight. Then PICISF877A micro controllers are connected to the LCD display. It shows the output value.
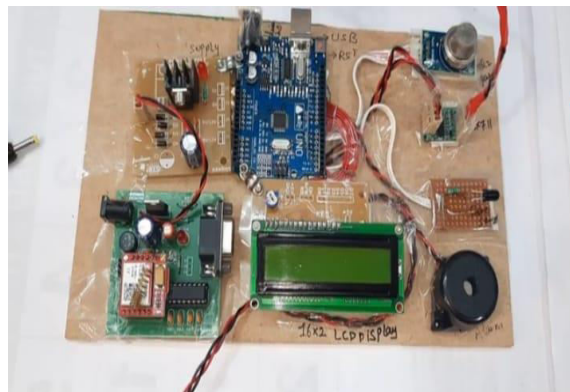

Figure 4 Hardware implementation

Then connected to the Node MCU . It used for low - cost open source iot platform then the internet provider connected to the Node MCU. Then PIC16F877A microcontroller connected to the gsm. it used for data transmission.

VI. CONCLUSION

The system of detecting gas level and automatically booking it when the gas is about to complete is designed and implemented in this paper is cost-effective. This proposed system fulfils the approach to book the gas efficiently. The features like measuring weight of LPG cylinder and displaying value on LCD makes this system an effective domestic safety machine and can be utilized in factories and different places to discover gas remained in cylinder. The cost for developing this system is extensively less and in a whole much less when compared to the price of fuel detectors commercially available within the marketplace.

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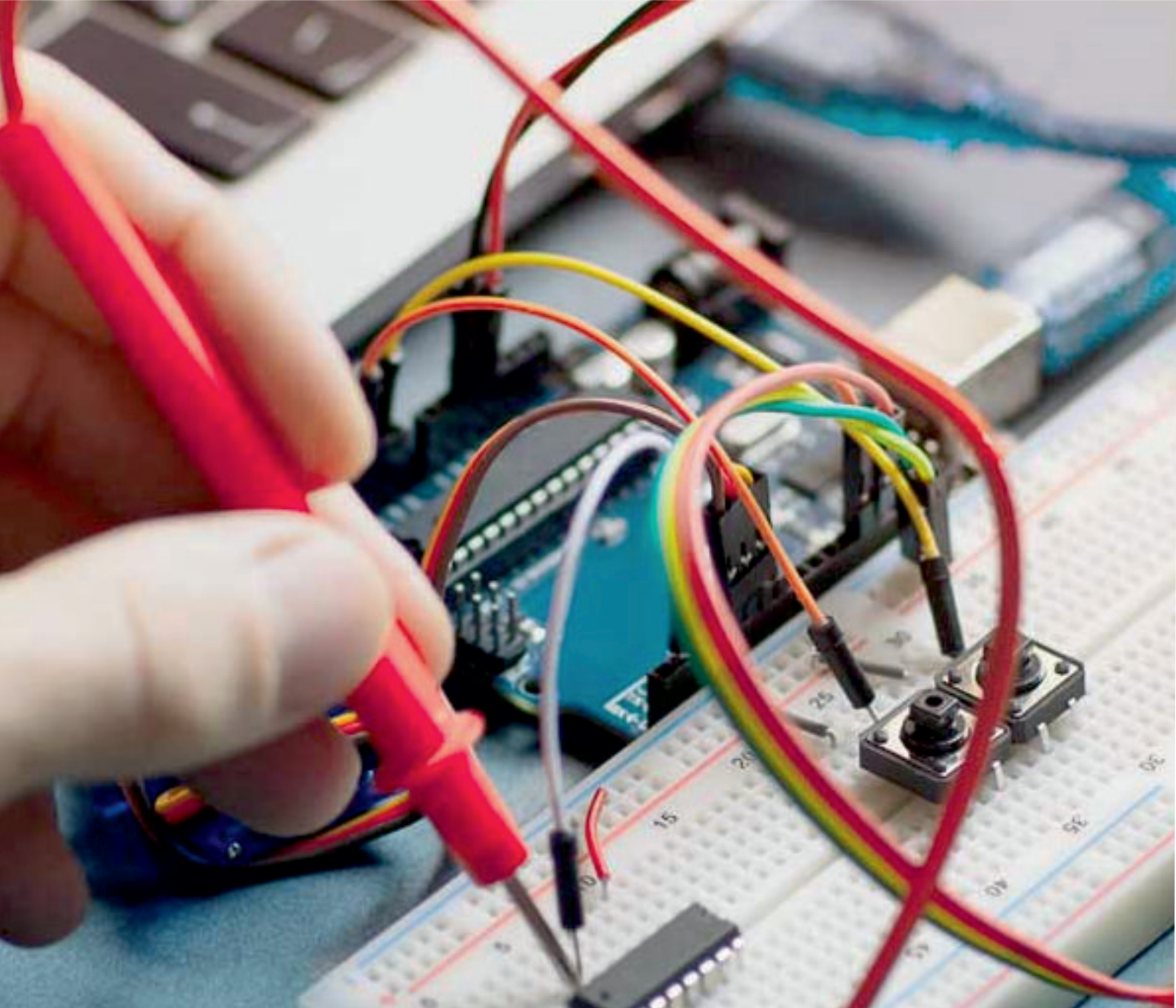
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