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Petrol Detection Meter Using IoT

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Abstract: ***There are number of petrol bunks that will try to fool us by short fuelling or short changing, when you go to fill your car or bike up, unless you stay alert. Most of the pumps still don't provide a printed bill. In order to eradicate this fraud this project helps you to know how much petrol has been falling into your petrol tank by showing you the exact point reading through LCD. Here we are implementing an IOT fuel monitoring and tracking system.***
Keywords: Fuel measurement, Estimated mileage, Low fuel alert warning, Fuel flow sensor, Microcontroller

I. INTRODUCTION

Petrol is the most essential thing on Earth; no automobiles can run without petrol. Because of its most essentiality lot of people are trying to fraud by playing some cheap tricks. There are number of petrol bunks that will try to fool us by short fuelling or short changing, when you go to fill your car or bike up, unless you stay alert. Most of the pumps still don't provide a printed bill. In order to eradicate the fraud you must check the meter reading or you should stay near to him. He never resets the meter to 0, he continues from the existing amount which results to less amount of fuel in our car or bike.

From all these our project helps you to know how much petrol has been falling into your petrol tank by showing you the exact point reading through LCD. Here we are implementing an IOT fuel monitoring and tracking system. So as soon as agent starts filling petrol in your bike/car, the flow sensor is activated. This flow sensor will be active till flow ends. Once flow ends it will calculate the amount of fuel filled and directly notifies on your mobile phone. If the phone is not available then it will store this data on cloud. This project also helps us to know the estimated mileage for the existing amount of fuel in your fuel tank. And also, if the petrol is less than the required level it generates a "LOW FUEL ALERT" warning through LCD display and also gives a buzzer sound.

II. MODULES DESIGN AND ORGANIZATION

There are three modules in this project. They are

A. Flow Detection

In this module, we will use a flow sensor to know how much amount of fuel has fallen into our fuel tank. Accurate flow measurement is an essential step both in terms of qualitative and economic points of view. Flow meters are excellent devices for measuring fuel flow and now it is very easy to build a fuel management system using the renowned fuel flow sensor. This sensor sits in line with the fuel line and contains a pinwheel sensor to measure how much of fuel has moved through it.

B. Estimating mileage

In this module, we will estimate the mileage for the existing amount of fuel present in the fuel tank. This module helps the user to know the estimated mileage for the existing amount of fuel present in his car/bike fuel tank.

C. Fuel Warning

In this module, an alert will be given if there is low amount of fuel in the fuel tank. Here we will consider the limit 25ml, if the amount of fuel in the fuel tank is less than required level then "LOW FUEL ALERT" warning will be given to the user, so that the user can fill his fuel tank immediately.

The main blocks of this project are:

1) Microcontroller (16F877A)
2) Reset button
3) Regulated power supply (RPS)
4) LED indicator
5) LCD
6) Fuel Flow sensor

D. Microcontroller

A microcontroller is a small computer on a single integrated circuit consisting of a relatively simple CPU combined with support functions such as crystal oscillator, timer, watchdog timer, serial and analog I/O etc. A microcontroller can be considered a self contained system with a processor, memory and peripherals and can be used with an embedded system.

E. Reset Button

In electronics and technology, a reset button is a button that can reset a device. On video game consoles, the reset button restarts the game, losing the player's unsaved progress. On personal computers, the reset button clears the memory and reboots the machine forcibly. Reset buttons are found on circuit breakers to reset the circuit. This button can cause data corruption so this button often doesn't exist on many machines. Usually, in computers and other electronic devices, it is present as a small button, possibly recessed into the case or only accessible by a pin or similar thin object, to prevent it being pressed accidentally.

F. Regulated power supply

It converts unregulated AC into a constant DC with the help of rectifier. It function is to supply a stable voltage to a circuit or device that must be operated within certain power supply limits. The major blocks of power supply are:

1) Transformer
2) Rectifier
3) Filter
4) 7805 voltage regulator

G. LED indicator

LED are used an indicator lamps in many devices and are increasingly used for lightning.

H. LCD

A LCD is a thin, flat electronic visual display that uses the light modulating properties of liquid crystals. The LCD used in this project is 16*2. We use this display to show the direction and speed of DC motor.

I. Fuel Flow Sensor

Accurate flow measurement is an essential step both in terms of qualitative and economic points of view. Flow meters are excellent devices for measuring fuel flow. Now it is very easy to build a fuel management system using the renowned fuel flow sensor. This sensor sits in line with the fuel line and contains a pin wheel sensor to measure how much of fuel has moved through it.

The project is implemented using following software's:

1) Express PCB – for designing circuit
2) PIC C compiler – For compilation part
3) Proteus 7 (Embedded C) – For simulation part

1) *Express PCB:* It is a free and open source software suite for electronic design automation (EDA) for printed circuit boards (PCB) layout. It uses GTK+ for its GUI widgets.
2) *PIC C Complier:* PIC compiler is software used where the machine language code is written and compiled. After compilation, the machine source code is converted into hex code which is to be dumped into the microcontroller for further processing. PIC compiler also supports C language.
3) *Proteus:* Proteus is software which accepts only hex files. Once the machine code is converted into hex code, that hex code has to be dumped into the microcontroller and this is done by the Proteus. Proteus is a programmer which itself contains a microcontroller in it other than the one which is to be programmed. Following are the product modules:

a) Schematic Capture
b) Microcontroller simulation
c) PCB Design
d) 3D verification

III. ARCHITECTURE

This is the architecture of the project, which has one input and three outputs. Microcontroller is the major component which takes fuel measurement from the fuel flow sensor and displays through LCD. Microcontroller also tells us the estimated mileage for the

fuel measured by the fuel flow sensor. Microcontroller also gives the LOW FUEL ALERT warning if the fuel level is less than the required level.

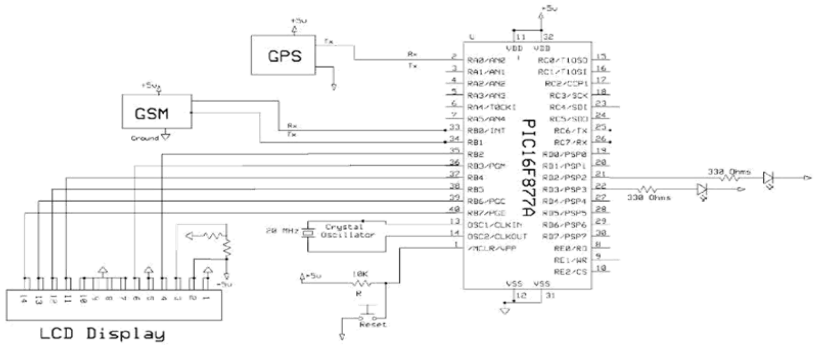


Fig. 1 Architecture

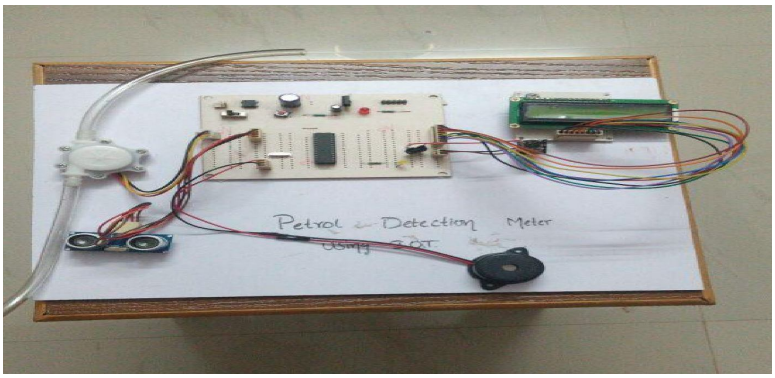


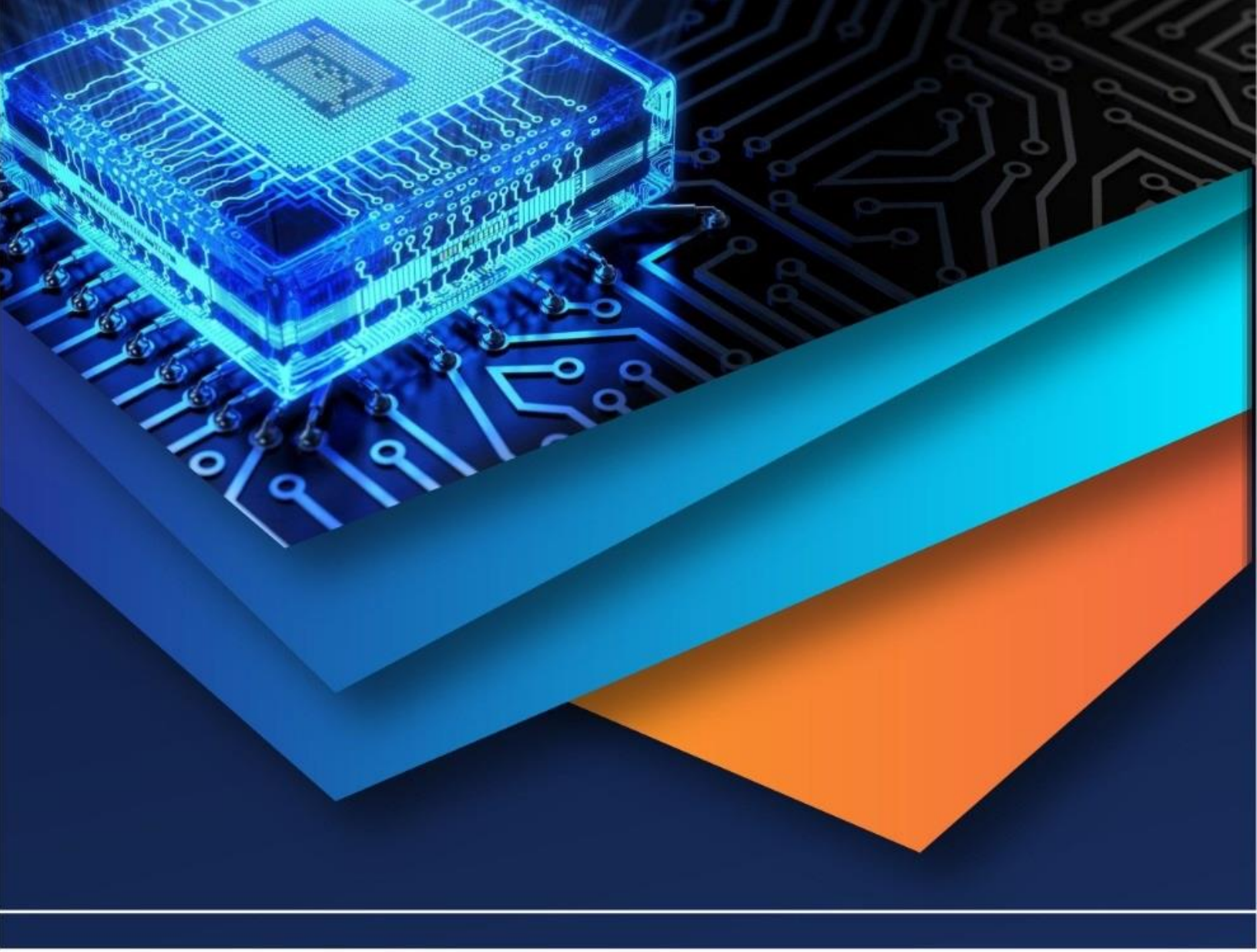
Fig. 2 Circuit

IV. CONCLUSION

PETROL DETECTION METER USING IOT is used to notify the users about the amount of fuel/petrol falling into their fuel tank. This project also helps us to know the estimated mileage for the amount of petrol present in our fuel tank. It also informs the user by producing a buzzer sound as a warning if there is low amount of petrol in our tank. It also displays "LOW FUEL ALERT" on the LCD screen. The proposed system will make sure how much amount of fuel is exactly deposited in our fuel tank to avoid loss of amount. We can know that through the LCD display fitted on our vehicle or through IOT Wi-Fi which stores this fuel measurement information so that we can check that information on our mobile phones from anywhere. As agent starts filling petrol in your bike/car, the flow sensor is activated. This flow sensor will be active till flow ends. Once flow ends it will calculate the amount of fuel filled and directly notifies on your mobile phone. If the phone is not available then it will store this data on cloud.

REFERENCES

[1] Albarbar, A., Fengshou Gu, and A. D. Ball. "Diesel engine fuelinjection monitoring using acoustic measurements and independent component analysis." Measurement 43.10 (2010): 1376-1386.
[2] Kum, Dongsuk, Huei Peng, and Norman K Bucknor. "Optimal energy and catalyst temperature management of plug-in hybrid electric vehicles for minimum fuel consumption and tail-pipe emissions." IEEE Transactions on Control Systems Technology 21.1
[3] , Siang Fui, and Chee Wei Tan. "A review of energy sources and energy management system in electric vehicles." Renewable and Sustainable Energy Reviews 20 (2013): 82-102.
[4] Basu, Debraj, et al. "Wireless sensor network based smart home: Sensor selection, deployment and monitoring." Sensors Applications Symposium (SAS), 2013 IEEE. IEEE, 2013.48 (SAS), 2013 sIEEE. IEEE, 2013
[5] D. Surie, O. Laguionie, T. Pederson, —"Wireless sensor networking of everyday objects in a smart home environmentǁ, Proceedings of the International Conference on Intelligent Sensors", Sensor Networks and Information Processing- ISSNIP- 2008, pp. 189 – 194.
[6] J. Tsado, O. Imoru, S.O. Olayemi , —"Design and construction of a GSM based gas leak Alert system"ǁ, IEEE Transaction,. IRJEEE Vol. 1(1), pp. 002-006, September, 2014.
[7] M. Eisenhauer, P. Rosengren, P. Antolin, —"A Development Platform for Integrating Wireless Devices and Sensors into Ambient Intelligence Systems", pp.1-3.



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