AUTOMATED FUEL MEASUREMENT FOR VEHICLE'S

Vishal H. Gahlot[1], Abhishek S. Narkar[2], Dhyan[3], Asst. Prof. Kavita Joshi[4]

[1] *Student, Electronics and Telecommunication ,G.H.R.C.E.M Wagholi Pune , Maharashtra, India*
[2] *Student, Electronics and Telecommunication ,G.H.R.C.E.M Wagholi Pune , Maharashtra, India*
[3] *Student, Electronics and Telecommunication ,G.H.R.C.E.M Wagholi Pune , Maharashtra, India*
[4] *Asst. Prof.,Electronics and telecommunication, G.H.R.C.E.M Wagholi Pune, Maharashtra, India*

ABSTRACT

Petrol pump frauds were very common in now days. Many of the petrol pumps today temper the pumps such that it displays the amount as entered, but in actual, the quantity of fuel filled in the consumer's tank is much lesser than the displayed value. The pumps are cheating for the profit of the petrol pump owner. This results in great profits for the petrol pumps, but at the same time the petrol consumers are being cheated. Most of the two wheelers vehicle in India has analog meters for the measurement of fuel level which is not that much exact, so it is not possible to measure exact amount of fuel inlet. In this modern and progressive world, products are being digitized owing to its benefits, user friendliness. So we are developing a project named "Automated Fuel Measurement for Vehicle". It consists of creating a digital display for the exact volume of fuel contained in the fuel tank. The above developed fact is considered in the project and it's found out that an effective solution for indicating the exact inlet of fuel in the tank digitally. A sensor and a microcontroller are used to find out the fuel inlet which is less costly and also exact. This paper is concentrating on the study of various fuel measuring sensors suitable for our developed project. Some problems with respect to the existing fuel measurement techniques are recognized and hence a better digital sensing technology has been developed, described and justified.

Keyword: - *Microcontroller, flow sensor, and GSM Module etc….*

1. INTRODUCTION

Petrol pump frauds were very common in now days. Many of the petrol pumps today tempers pumps such that it displays the amount as entered, but in reality, the inlet of fuel filled in the consumer's tank is much lesser than the displayed value .The pumps are cheating for the profit of the petrol pump owner. This results in great profits for the petrol pumps, but at the same time the customers are being cheated. Most of the two wheeler's in India consist analog meters which will not give the exact amount of fuel currently in the vehicle and also it is not possible to verify the quantity of fuel filled at the petrol pump. Also in this modern and progressive world, products are being digitized for its benefits and user friendliness. So we are developing a project named "Automated Fuel Measurement For Vehicle". It consists of a digital display for the exact volume of fuel inlet in the fuel tank. The above discussed fact is considered in the project and it is found that a proper solution for showing the exact availability of fuel in the tank in the digital form. A sensor and a microcontroller is used to find out that fuel inlet is exact. This paper is concentrating on the study of various fuel measuring sensors suitable for our developed project. Some problems with respect to the existing fuel measurement techniques are recognized and hence a better digital sensing technology has been developed, described and justified.

Until now the exact measurement of the fuel measurement has not been of great importance. The intension of measuring the fuel level has been to show the information on the system with a fuel meter. In place of accuracy the two most important things have been to neglect sudden changes in the fuel level displayed and the meter must indicate that the tank is empty when the fuel level is below the level. This system is not capable to provide the exact value of fuel in the fuel tank. Also such system cannot prevent us from getting cheated at petrol pumps and this costs

more for less amount of fuel so filled .So it becomes necessary to develop such a system which gives exact inlet value of fuel in fuel tank.

2. PROPOSED SYSTEM

As we know that the particular project is a real time project which is highly concerned about the petrol theft by petrol frauds. This project has several components like:

a. ARM Microcontroller (LPC2148)
b. Fuel Measurement Sensor
c. LCD 20X4
d. GSM Module
e. Power Supply

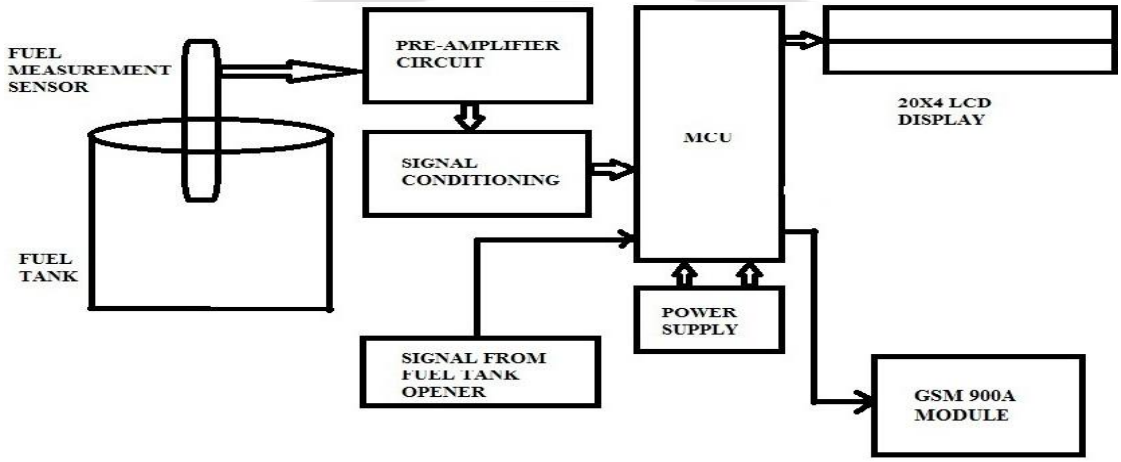

Figure -1: Block Diagram

Fig -1: Snapshot of project

2.1 Flow Sensor

Measure liquid/water flow for your solar, water conservation systems, storage tanks, water recycling home applications, irrigation systems and much more.The sensors are solidly constructed and provide a digital pulse each time an amount of water passes through the pipe.The output can easily be connected to a microcontroller for monitoring water usage and calculating the amount of water remaining in a tank etc

2.2 GSM Module

This is a GSM/GPRS-compatible Quad-band cell phone, which works on a frequency of 850/900/1800/1900MHz and which can be used not only to access the Internet, but also for oral communication (provided that it is connected to a microphone and a small loud speaker) and for SMSs. Externally, it looks like a big package (0.94 inches x 0.94 inches x 0.12 inches) with L-shaped contacts on four sides so that they can be soldered both on the side and at the bottom. Internally, the module is managed by an AMR926EJ-S processor, which controls phone communication, data communication (through an integrated TCP/IP stack), and (through an UART and a TTL serial interface) the communication with the circuit interfaced with the cell phone itself. The processor is also in charge of a SIM card (3 or 1,8 V) which needs to be attached to the outer wall of the module The module is supplied with continuous energy (between 3.4 and 4.5 V) and absorbs a maximum of 0.8 A during transmission.

3. DESIGN AND HARDWARE

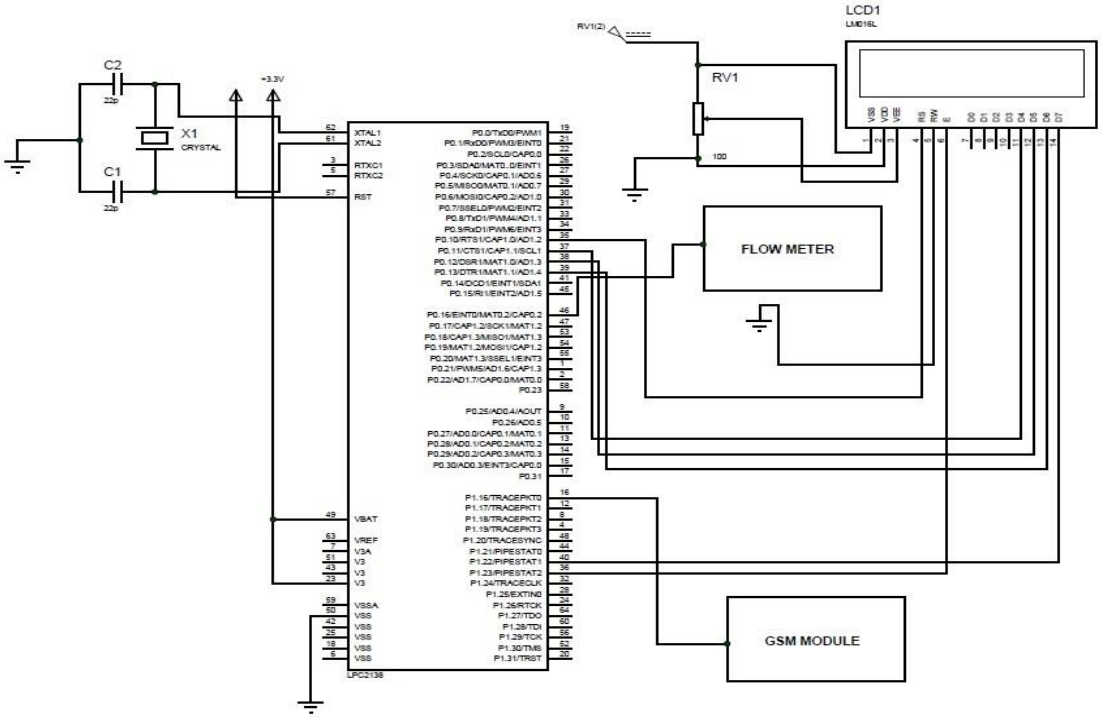

figure: circuit diagram

3.1 Power Supply

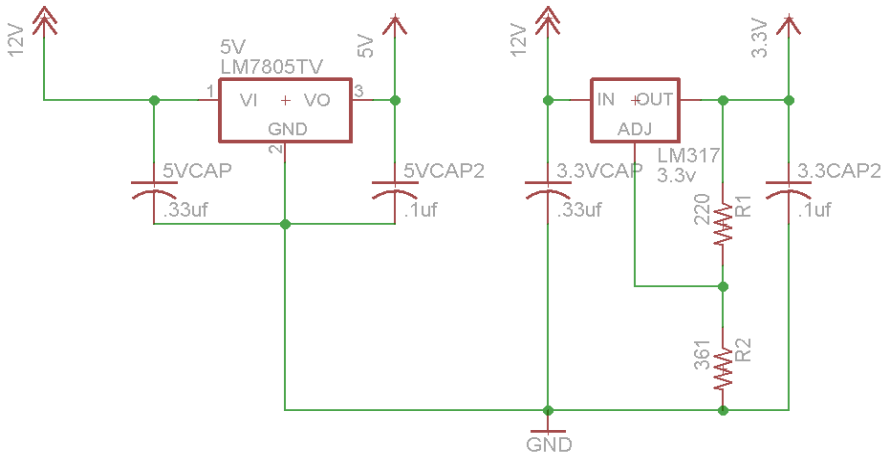

Fig -2 Power Supply

4. CONCLUSIONS

The existing float based measurement techniques are far from exact measurement, but the microcontroller based technique is more exact compared to the existing technique but still that is not more exact due to fuel floundering in the tank. Sensor is graded with respect to the inlet of fuel to the tank. So by using any one of the level measuring sensor mentioned above will be more exact, more reliable, and cheaper than other analog meters, and will allow for added features that benefit both the consumer. In the future, the different vehicle company manufacturers will implement this kind of fuel system which also provides security for the vehicle. Not that only the measurement be more exact, and the consumers also will not be cheated for their hard earned money.

5. REFERENCES

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