

DIGITAL FUEL INDICATOR

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ABSTRACT

Today, in the existing vehicles we face a common problem of fuel meters not showing accurate results. They are unable to show the exact amount of fuel left in the tank, whether they are analog fuel meter or a digital one (bar type digital fuel meter).

The above furnished fact is considered in my project and I have found out a proper solution for indicating the exact amount of fuel left in the tank digitally (numerically). Ex 1.8L, 1.5L, 1L, 0.7L

Keywords

Microcontroller, A/D converter, Analog fuel gauge, Float sensor.

1. INTRODUCTION

The aim of our project is to monitor the level of the fuel in the vehicle fuel tank and to automatically indicate the level information digitally, numerical value through LCD.

We are already aware that modern vehicles display the amount of fuel in the fuel tank by the means of analog indicators, which oscillates between E (empty) and F (full) at its extreme ends or by digital bars running through E (empty) and F (full) indicators.

To the contrary every one of us might have experienced the problem with improper estimations of the current fuel indicating system. Thus, digital (numeric) fuel indicator system will help us exterminate common problems like-

1. Misinterpretation of the amount of fuel left by the drivers.
2. Petrol pumps theft cases.

Also, it will help us to know the current mileage of the vehicle.

2. APPLICATIONS

- To produce a numeric readout of the amount of fuel left in the tank.
- Capable of being in the dash of the vehicle, thus needed to minimum modifications.
- This project is adaptable to all types of vehicles, to indicate the amount of fuel in fuel tank

3. MAIN COMPONENTS

- LCD
- Microcontroller
- Analog to digital converter (A/D converter)
- Petrol tank with float sensors

- Analog fuel gauge
- Battery

3.1 LCD

A liquid-crystal display (LCD) is a flat panel electronic visual display which shows the amount of fuel in the container in litres without much modification in the dash of the vehicle.

3.2 Microcontroller

A microcontroller will be used, which is a small computer on a single integrated circuit containing a processor core, memory and programmable input/output peripherals. Microcontroller used is a flash programmable and erasable read only memory.



Fig 1: An 8-bit microcontroller

3.3 A/D converter

It is a converter which converts analog value to digital value.

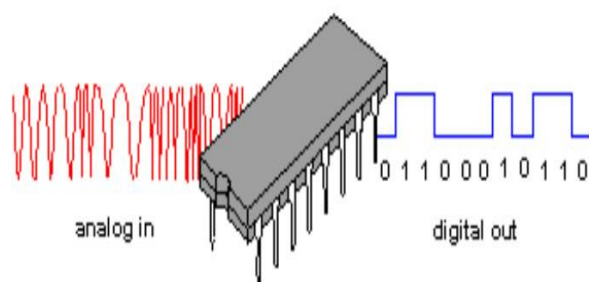


Fig 2: An analog to digital converter

3.4 Petrol tank with float sensor

A petrol tank is a container where fuel is stored. It is provided with a instrument namely float sensor which measures the amount of the fuel in the tank.



Fig 3: Float sensor of a petrol tank

3.5 Analog fuel gauge

It is a instrument used to indicate the level contained in the tank. Thus, it shows the amount of fuel in the tank (EMPTY, HALF, FULL). The gauge consists of two parts namely sensing unit and indicator.

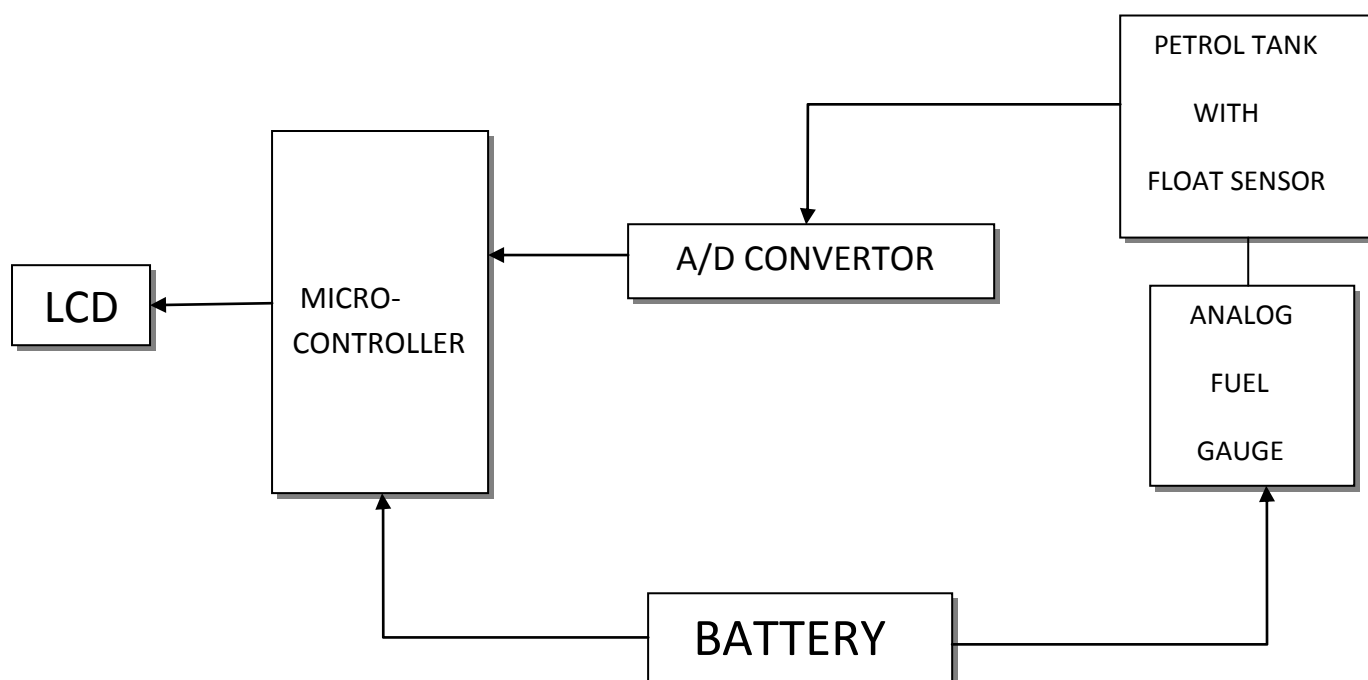
3.6 Battery

A battery is used to give supply to the analog fuel gauge, A/D convertor along with LCD.

4. CONSTRUCTION AND WORKING

The petrol tank with float sensor is connected to an analog fuel gauge like every vehicle. The float sensor provides analog value to the A/D convertor which converts analog value to digital value which is further read by the microcontroller (which is flash programmable and erasable ROM). At last, the microcontroller gives the result of the amount of fuel in the tank which is displayed on a LCD screen. The system as a whole is connected to a battery.

5. BLOCK DIAGRAM



6. ADVANTAGES OF DIGITAL FUEL INDICATOR

- Digital fuel indicator helps to give measure of exact quantity of fuel left in the tank.
- Exterminate petrol theft cases.
- Mileage of the vehicles can also be determined.

7. DISADVANTAGES OF DIGITAL FUEL INDICATOR

- Cost is relatively high than analog meters.
- High maintenance required.
- It is robust in construction.

8. CONCLUSION

We have concluded that, the project “digital fuel indicator” gives the quantity of the fuel in the fuel tank in the form of numeric digits more accurately. Thus, due to this we will now be able to judge that how long distance can be travelled by the remaining fuel in the tank. This will also give vivid information of fuel filled at the petrol pumps. Here, I conclude that the required goals and objectives of my project have been achieved. I feel that my project serves something good to this world and like to present it before the prosperous world.

9. FUTURE ENHANCEMENTS

In future the proposed method can be improved by providing fuel cells at different places of fuel tank to measure more precise fuel levels at different conditions.

10. REFERENCES

- [1] www.howstuffworks.com
- [2] <http://www.speedyjim.net>
- [3] <http://www.wisegEEK.com/what-is-a-fuel-gauge.htm>
- [4] http://www.en.wikipedia.org/wiki/PIC_microcontroller
- [5] “Modified type intelligent digital fuel indicator system” IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE)
- [6] <http://en.wikipedia.org/wiki/analog-to-digital-converter>