Fuel Calibrator And Monitoring System For Automobiles

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ABSTRACT

Described herein is a method for fuel monitoring in a fuel tank of an automobile, the method comprising checking, using a control unit, whether time (t) greater than or equal to a predetermined time period lapsed after the ignition of an engine of the automobile, if yes, initiating sampling of an output voltage using a sensor based system having one or more pressure sensors disposed inside the fuel tank, checking an output voltage (V) of at least one pressure sensor of the sensor based system, wherein the control unit checks whether the sensor output voltage (V) is less than a predetermined value, and initializing an odometer reading counter (c).

1.INTRODUCTION

India is a country in which almost every vehicles are fuel type. So, Rising fuel prices are a concern for everyone and one can't do much about it. Instead, to make sure you're getting every drop for your money. The problem is that most of fuel pump across India have been accused for the fuel scams . To overcome these sort of scams we have deployed a working model which would helps us to identify the quantity of fuel filled to our vehicle from the petrol pump and it would also indicate us about the level of fuel available in our vehicle in a digital form and it would also send the details to the owner's mobile for more clarification. The main aim of the project is to propose a technique to measure the amount of fuel available in tank during static as well as dynamic conditions.

2 SYSTEM DESCRIPTION

2.1 FLOW DIAGRAM:

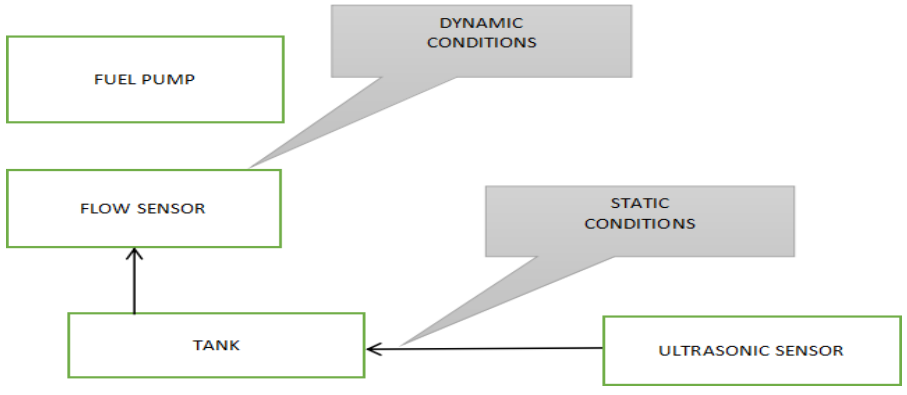


Fig 2.1 Flow Chart for Fuel Calibrator and Monitoring System for Automobiles

The Petrol from petrol pump flows through the flow sensor to the petrol tank. Data of petrol flow in the tank are collected using flow sensor and this condition is said to becalledasdynamiccondition.ultrasonicsensorareusedtomonitorfuellevelintanks and their data are collected by using the ultrasonic sensor and this condition is said to be called as static condition. The GSM module is used to send message for the owner about the quantity of petrol filled.

2.2 BLOCK DIAGRAM FORCLASSIFICATION:

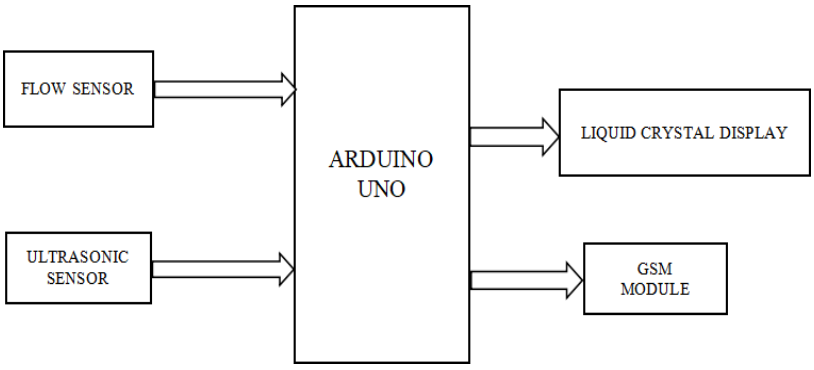


FIG 2.2 BLOCK DIAGRAM FOR CLASSIFICATION OF FUEL CALIBRATOR AND MONITORING SYSTEM

As we already seen in flow diagram explanation, block diagram explanation is also similar as flow diagram explanation, In this, The Petrol from petrol pump flows through the flow sensor to the petrol tank. Data of petrol flow in the tank are collected using flow sensor and sent to Arduino uno Microcontroller. ultrasonic sensor are used to monitor fuel level in tanks and there data are send to Microcontroller. GSM module is used to send message for the owner about the quantity of petrol filled. After calibrating the petrol flow and petrol level are digitally displayed in thelcd.

3. PROPOSED SYSTEM

3.1 CIRCUITDIAGRAM

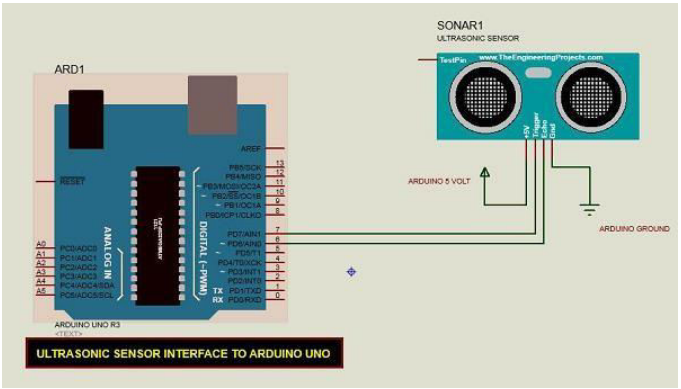


FIG 2.3 CIRCUIT DIAGRAM FOR ULTRASONIC SENSOR WITH ARDUINO UNO

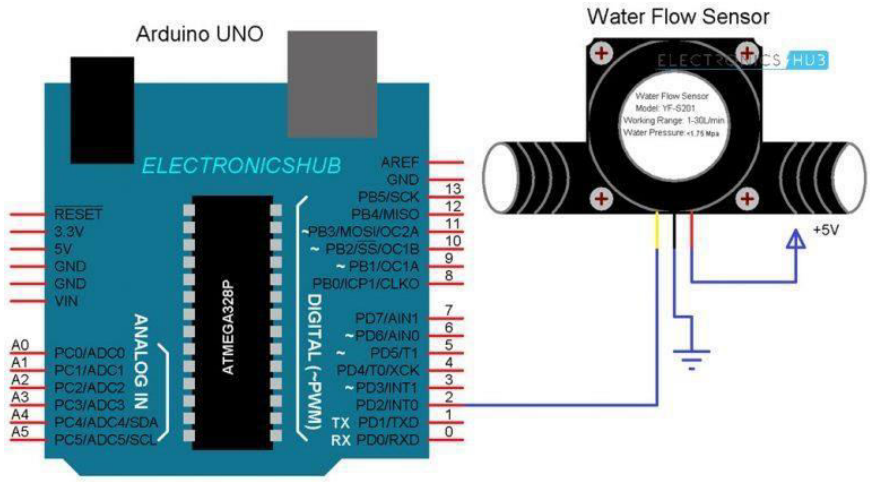


FIG 2.4 CIRCUIT DIAGRAM FOR FLOW SENSOR WITH ARDUINO UNO

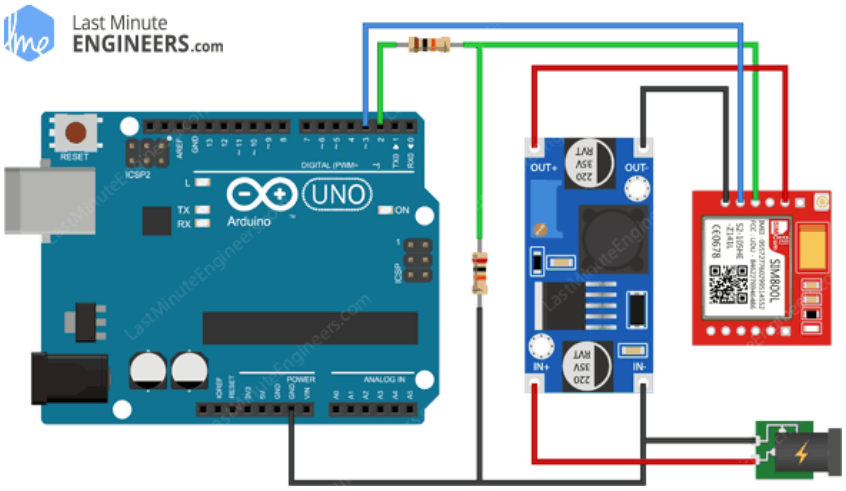


FIG 2.5 CIRCUIT DIAGRAM FOR GSM MODULE [SIM800L] WITH ARDUINO UNO

3.2 WORKING:

The Turbine type flow sensor is used to collect the quantity of petrol flow into the tank. The ultrasonic sensor is used to collect the level of petrol in the tank it emits ultrasonic sound waves which gets reflected back after hitting petrol in the tank converts the reflected sound sound into an electrical signal. The Arduino unoMicrocontoller calibrates the data's recived from ultrasonic and flow sensor and the output is displayed in lcd. The GSM module is used to send message for the owner about the quantity of petrolfilled.

RESULTS

This chapter gives a brief information regarding sensors interfaced Arduino uno and thier outputs are displayed in LCD.

HARDWARESETUP

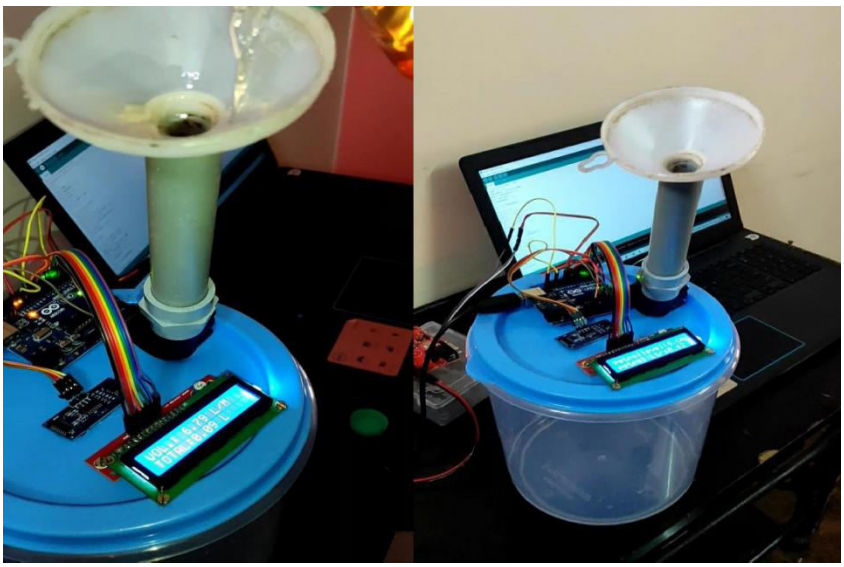


FIG 5.1 HARDWARE SETUP

DISPLAYING OFRESULTS:

The following results shows the list of figures which are captured during the demonstration of working model hardware setup which includes:

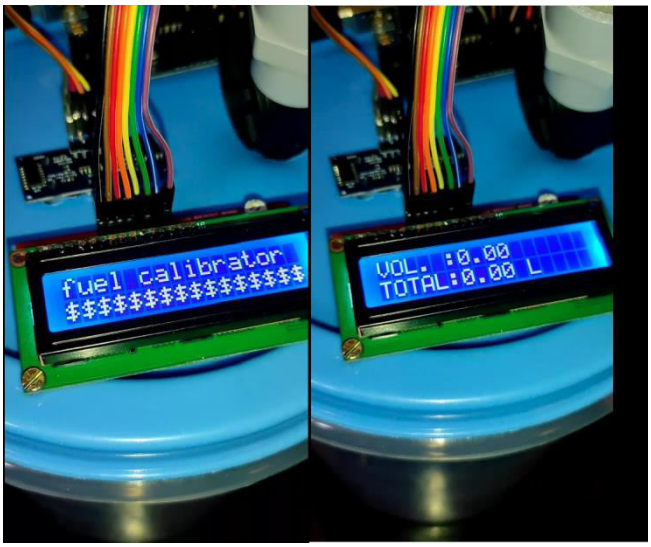


FIG 5.2 DISPLAY BEFORE FUEL FILLING PROCESS

Digitally displaying of fuel filling process (before) in a static condition as well as dynamic condition, during fuel filling process in a static and dynamic conditions and digitally displaying of

fuel filling process (after) in a static and dynamic conditions.

After completion of fuel filling process, The amount of petrol present inside the petrol tank and the level of petrol inside the tank are digitally displayed by using LCD display and then by using the GSM module ,the SMS notification for the user is sent, the notification SMS showing details about the amount of petrol is filled in a petrol tank by the user is displayed.

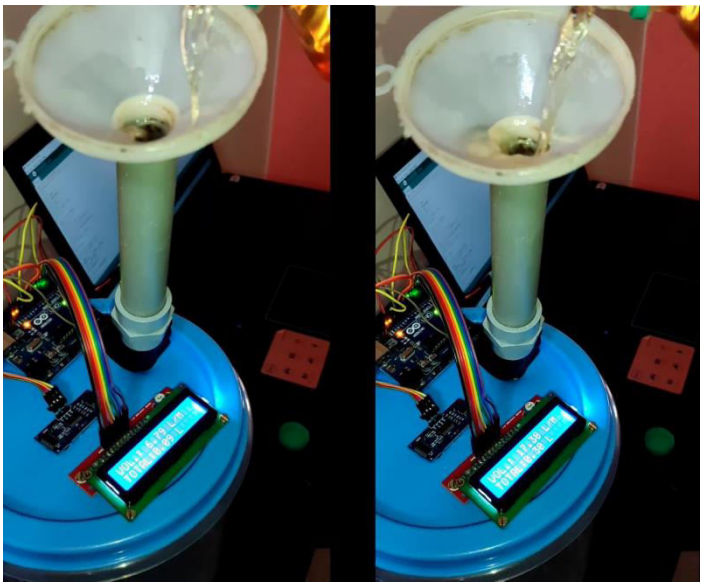
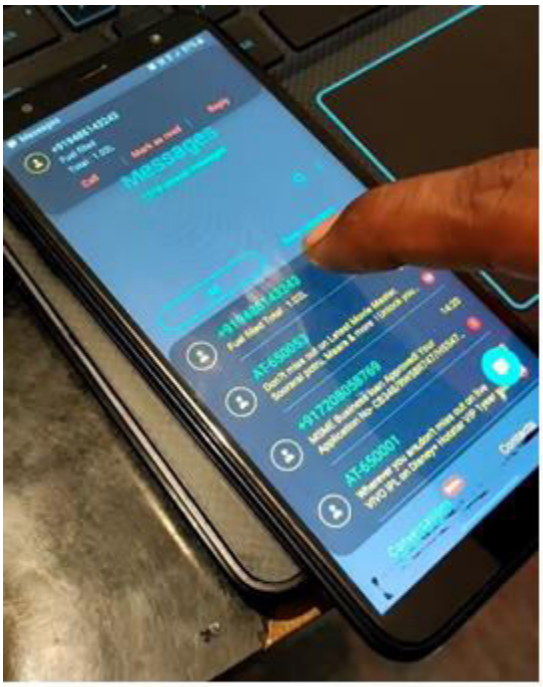


FIG 5.3 DISPLAY DURING FUEL FILLING PROCESS [DYNAMIC CONDITION]

FIG 5.4 DISPLAY AFTER FUEL FILLING PROCESS [DYNAMIC CONDITION]

Fig 5.5 Display After Fuel Filling Process [Static Condition] At 6cmLevel

Fig 5.6 Display After Fuel Filling Process [Static Condition] At 5cmLevel



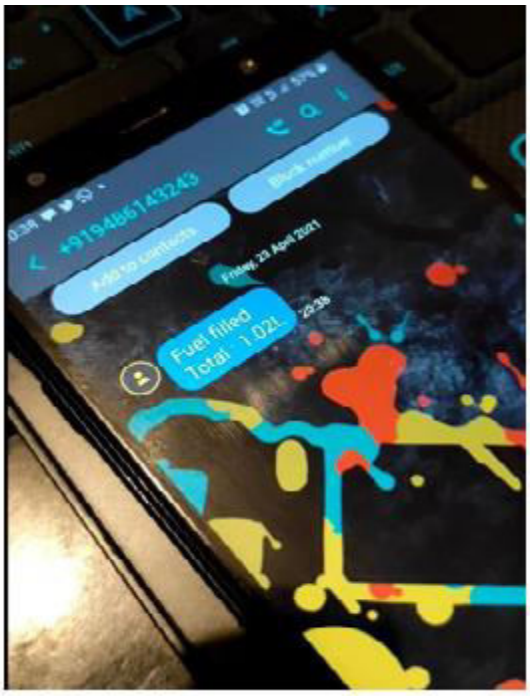


FIG 5.7 SMS NOTIFICATION FOR THE USER SENT BY GSM MODULE

6. CONCLUSION

6.1 CONCLUSION:

Thus this system provides a simple way of detecting the fuel calibrator and monitoring system for automobiles.This project is developed considering simple design and providing cost effective solution for consumers to install in all automobiles for detecting fuel quantity in petrol tank.This system is more reliable and efficient for monitoring the petrol filled in the automobiles while fuel filling process in petrolbunk.

6.2 FUTURESCOPE:

After having implemented this model for fuel calibrator and monitoring system for automobiles there remains scope for improvements. This system can be integrated with some features like voice message of the petrol filled. This system can be integrated with some features like displaying mileage or distance to go before the tank gets empty.

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