

# DETERMINATION OF ADULTERATION AND QUANTITY OF PETROL IN AUTOMOBILES

V. S. Vijayapriya<sup>1</sup>, R. Nandhini Devi<sup>2</sup>

Kongu Engineering College Perundurai Erode, India

<sup>1</sup>vijayapriya1993@gmail.com

<sup>2</sup>nandu.uva@gmail.com

**Abstract**— Determination of adulteration and quantity of petrol in automobiles is implemented to ensure quality, quantity and to determine the efficiency of the engine through mileage. It consists of pH meter, LDR arrangement, proximity sensor, PIC microcontroller and LCD. The pH meter is used for the quality testing of petrol and its values should range between 5.5-5.88 to indicate petrol without adulteration. LDR arrangement produce a change in the voltage according to the level of petrol in the tank is used for quantity measurement. Proximity sensor is used to determine the petrol consumption between the levels of LDR arrangement by calculating the number of rotations of the wheel through induction type. The inputs from the pH Meter, LDR setup and proximity sensor are connected to the PIC microcontroller. Based on the voltage level produced from the sensors, PIC controller would calculate and display the corresponding values of quality, quantity and mileage of the vehicle.

## I. PROBLEM

Fuel adulteration leads to tail pipe emission and subsequently leads to engine knock and it is also dangerous as it contains the substances that are highly inflammable. Hence consumers are adversely affected by the adulteration in terms of both quality and quantity. It is very essential to ensure the quality and quantity for customer satisfaction and green environmental conditions. Presently the quality of the petrol is tested manually using chemical testing method. It would consume more time to produce the results and require more skilled persons. Customers are unable to ensure the quantity of petrol in their vehicles after filling in the petrol bunk. The quantity of petrol is determined using float method, DUT- E, load cell, Magnetic float and infrared method. The disadvantages of these methods are inaccurate due to vibration effects produced in the vehicles.

## II. SOLUTION

In this proposal a simple technique to measure the adulteration, level of the petrol filled in the tank; petrol consumption per kilometer has been done. It consists of pH meter, LDR arrangement and Proximity Sensor. pH meter is

fitted externally on the modified setup of tank, to determine the adulteration in petrol. A set of LDR Arrangement is made and is fitted by the side of the tank, to determine the petrol level. Additionally proximity sensor and LDR arrangement is employed to calculate the petrol consumption per kilometre.

## III. RESULTS AND DISCUSSION

The deviation between the laboratory pH value and the pH tester (HI98107) is 3.91 %. Accuracy of LDR arrangement to ensure the quantity of petrol in the tank is  $\pm 3\%$ . The petrol consumption per kilometer is deviated by 2% error through the proposed LDR and proximity sensor arrangement.

The pH values measurement and the level of the petrol tank ensured is displayed in Fig.1, after the vehicle travel a distance of one kilometer the petrol consumption values are displayed using LCD in Fig. 2.



Fig. 1 Displayed results



Fig. 2 Displayed result

#### IV. PRACTICAL APPLICATION

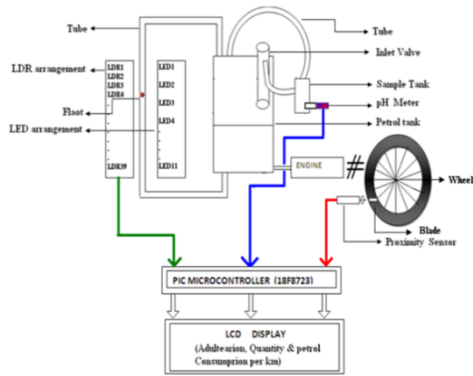


Fig 3. Block diagram of the process

#### V. SUMMARY

Quality and Quantity measurement of the petrol in the vehicle make the customer satisfaction with proper awareness and the engine efficiency determination would ensure the engine conditions to indicate service period of the vehicle. The petrol consumption per kilometer also indicates about the condition of the engine to alert the customer, regarding its maintenance. The system is simple and cheap so that it can be installed in every kind of vehicles with some simple modifications according to the dimensions of the petrol tank present in it. The implementation of this project is a great boon to the public in future.