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## Digitalised fuel monitoring device using IoT

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### ABSTRACT

Today's world is running towards digitalization in order to make life comfortable and easy. Generally, in fuel refilling stations we refill fuel to our automobiles daily. Here we are not having any digitalized meters to our automobiles to show whether we are receiving the correct amount of fuel refilled or not. Many media people caught refilling stations on their manipulation in refilling the fuel using some circuits and remote. So we came up with a digital solution to indicate the correct amount of fuel refilled into the fuel tank instantly. And intimating the vehicle owner regarding the fuel refilling through an SMS using GSM MODULE.

**Keywords:** Automobile, Refilling

### 1. INTRODUCTION

At present scenario, automobiles have a fuel gauge to indicate the driver regarding fuel in the tank. The working of this gauge totally depends on the infrastructure of the vehicles fuel tank. In some automobiles fuel level indicating needles are used to measure the fuel in the tank. So, we are facing problem in measuring the exact amount of fuel present in the tank. And there is no specified unit to measure the amount of fuel added when the automobile is refilled in fuel stations. As mentioned above automobile users are been manipulated daily throughout the world. Our proposal helps in measuring the exact amount of fuel refilled into the fuel tank while refilling. This device consists of fuel meter, microcontroller, and digital display. The advancement of this device is done by indicating the amount of fuel inside the fuel tank of the automobile.

#### 1.1 Images showing fuel stations manipulation:



Fig. 1: Electronic circuits in fuel meters



Fig. 2: Without holding the gun refilling the fuel

### 2. LITERATURE SURVEY

Since the usage of automobiles has been tremendously increasing day by day the consumption of fuel is also increased. So we should walk towards the saving of fuel. Nowadays we are having many types of fuel monitoring devices based on ultrasonic sensors, Analog fuel meters, mechanical floats, capacitive and optical sensors. So using present devices we cannot measure the amount of fuel added to tank during refilling the fuel tank accurately. So we are going to the advancement of the product in measuring the fuel refilled accurately and displaying digitally.

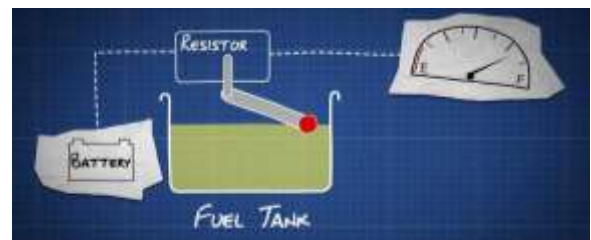


Fig. 3: Mechanical floats for measurement



Fig. 4: Analog fuel meter

### 3. RELATED WORK

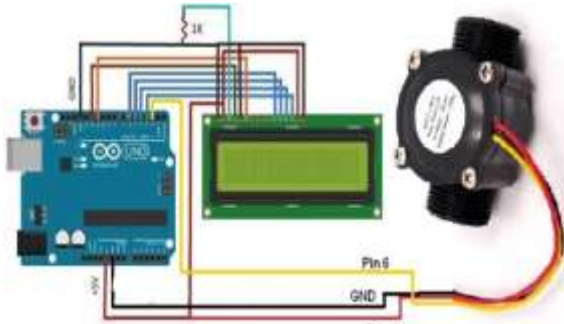


Fig. 5: Block diagram of the device

In this device, we used Arduino Uno microcontroller since it is very easy to use and code.



Fig. 6: Arduino Uno board

The flow meter is designed into a compact module for automobile fuel tank. This flow meter is controlled by Arduino microcontroller and the accurate flow rate is calculated and displayed on the 20\*4 digital display module which is fixed on the vehicle's dashboard where it is convenient for the driver.



Fig. 7: 20\*4 LCD display

This display is used to view the digital reading of flow meter. It also shows the amount of fuel present in the tank.

As soon as the fuel is refilled the Arduino micro-controlled such a way that the owner of the vehicle will be notified by an SMS regarding the fuel refilled using GSM module.

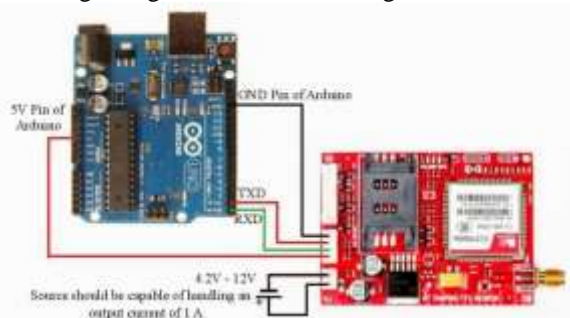


Fig. 8: GSM Module connected to Arduino

### 4. RESULT

This device shows the following results:

1. The quantity of fuel added to the tank
2. An SMS is sent to the owner of the vehicle regarding fuel refilling.



Fig. 9: Device setup final view



Fig. 10: LCD reading in liters

### 5. CONCLUSION

Digital fuel monitoring device is very smart to measure the accurate amount of fuel added to the tank during fuel refilling and sends SMS alert to the vehicle owner regarding the fuel refilling by the vehicle driver. This device keeps the bond between driver and owner strong. We can be safe from the manipulation down by fuel refilling stations. The device is cheap and easy to use.

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