

Digital Fuel Indicator for Quest Transportation System

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Abstract: The fuel indicator are always In this 21st century almost everything has become digital, if the fuel indicators in the vehicles is additionally, made advanced we can determine the correct quantity of fuel available in the fuel tank. Hence, this system will be indicating the amount of fuel in the tank in milliliters. The indication of fuel will be in numerical digits (ex: - 100ml, 200ml and 1000ml). This system mainly focuses about the indication of fuel level in car, trucks or diesel occupied tanks. This work predominantly focuses about the sign of fuel level in bike tanks and predicting the user location by using latitude and longitude value which is send by GPS to the system. This work allows us to get rid of issues like fuel theft at fuel stations. Fuel adulteration and keeps us from getting into circumstances where we may get into inconvenient situations due to unspecified level of fuel. Current systems contain the fuel indication mechanism for the automobiles which are computerized yet they don't show the correct amount of fuel which is available in the tank i.e. they demonstrate the measure of fuel in as bars and not in numbers or digits like liters or Milliliter. So, this issue is considered for our work of building up the digital (numeric) fuel indication mechanics for automobiles which indicates correct level of fuel.

Keywords: Digital System, Fuel Indicator; Fuel Theft Control;

1. Introduction

In existing world, the population of the people increases day by day, so the need of the vehicle also increased. We are already aware that vehicles display the amount of fuel in the fuel tank by means of some indication like bar running through the E (empty) and F (full) indicators [1]. The manufacturer provides the specification that each bar maps to the corresponding fuel approximately. The analog fuel gauge has two mainly units, namely the sending unit (it is the vital part of every vehicular fuel tank and works flawlessly as the float moves vertically with the changing fuel level the opposite end of the lever slides across the resistor causing a change in voltage supply at the gauge) and the gauge (fuel gauge is the measuring instrument that determine and reports the amount of fuel that is left in vehicles tank or tanks the amount of current flowing through the gauge heats up the bi metal strip. The strip expands and determines how for the needle moves voltage is supply to the gauge by small voltage regulator in the instrument panel which reduce circuit voltage to the about 5 volts). The current fuel demonstrating frame work in vehicle utilize simple and computerized visual for indicating surmised status of fuel level not displaying the amount any numerical [2]-[5]. This framework demonstrates the fuel level in numerical by utilizing LCD. In world mileage issue has risen to be a major issue promoting clients stalling out in obscure zone since they neglect to check the fuel level. To the contrary every one of us might have experienced the problem with improper estimations of the current fuel level in the tank with existing bars representation system. There is the lot of news regarding the petrol pumps frauds which leads to corruption [6]. There is the difference between the amount of fuel displayed on the meter and the fuel filled in the tank most of the -times the fueled filled is less than the displayed value. This is because of the arrangements made in the filling machine which leads to benefit to the owner. In our university (Quaid-e-Awam University of Engineering Science and Technology Nawab shah), analog fuel meter is used in transport. As analog fuel meter does not provide accurate and exact amount of fuel present in the fuel tank, during the travel drivers are not aware of the distance covered for the rest of fuel present in the vehicle [7]-[10]. Therefore, analog display user cannot find out the accurate and precise value of remaining fuel by considering this fact we have designed a digital fuel level indicator which will surely provide exact amount of fuel

present in the fuel tank in liters or in milliliters [11]. An advance digital fuel meter is the one which shows the level of fuel in digital format. In this work, we proposed a digital measurement system which constantly display the different parameters like fuel quantity and mileage. In digital fuel meter construction, the fuel meter is directly assembled in the vehicle, the fuel meter will work accurately. Fuel meter consist of LCD and sensor [12]-[14]. This proposed configuration can give an approach to stop this issue and control exorbitant utilization of the fuel to the client by demonstrated mileage. Today in digitized world if the fuel indicator in automobile is also made digital, it will help to know the exact amount of fuel available in the fuel tank. Digital indicator provides us the exact and precise value of fuel [4]. Therefore, we want to implement digital fuel level indicator in our university transport system. The aim of our work 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. The fuel level detection circuit is used to detect the level of fuel in the tank, here sensors are placed at certain places to find out the fuel level and the signal are sent to the controller unit for further operations. Here sensors are used at various placed to sense the fuel level and the signal from these sensors are sent to controller unit to decide the exact level information [15]-[18]. When the fuel level reaches the top-level sensor, which means that the tank is full and it is will be indicated to the user by means of beep noise and the level information is indicated through LCD. This work mainly concentrates about the indication of fuel level in the vehicle tanks. Various other features lie the distance that can be travelled to the corresponding fuel, is added with disarrangement which will explain the clear performance of the vehicle to the corresponding fuel. In current transport system inaccurate and irregular of fuel present in the tank of fuel is shown driver experiencing mileage we had also observe many fuel thefts cases that occurred in different organization, industries and companies in round number there is analog system in transport which does not show the actual amount fuel present in tank.

1.2 Problem Statement

The problems which people are facing in daily life regarding fuel system [19]. It is difficult to find the accurate amount of fuel present in the fuel tank. University's transport drivers are not aware of that how much fuel quantity will be sufficient for that day [20]. University transport staff also found allotted them for per day.in cheating in handling the fuel management that have. Furthermore, there are several issues found regarding security and accuracy of contact fewer measuring devices to find accurate and error free measuring.

1.2 Proposed Solution

In this research, the design of a fuel level system is proposed that show the digital value on LCD. It is to design a digital fuel indicator system which shows the location through the GPS system, where petrol is filled and amount of petrol by sending the message to the owner of vehicle and also to calculate the mileage.

2. Literature Review

In designing the digital fuel indicator different past studies have been carried out. These are discussed as following:

Rahul Gogawale (2016) [8] discussed the fuel indicator in the vehicles is made digital, then it will help us to know the exact amount of fuel available/filled in the tank. The above fact is considered in our work. The exact amount of fuel available in the tank will be displayed digitally by making the use of Ultrasonic sensor [21]. The ultrasonic sensor is a non-contact sensor, with low power requirement and good accuracy It overcomes the problems faced by other gauges and is suitable for the non-contact measurement of the fuel inside the tank, Petrol Level Detection Using Ultrasonic Sensor have developed a methodology wherein the system contains two Ultrasound Sensor modules, Liquid Crystal Display (LCD) to show the updates, a micro SD card for data acquisition & data saving and Real Time Clock (RTC) to give accurate time and date. The whole system is controlled by using AVR controller. Ultrasonic sensors are characterized by low-cost and the possibility of being used in environments and situations where it is not possible to use more complex sensors as camera systems and laser devices, optical sensors [22]. In their work, HC SR-04 is used which is an ultrasonic electric

Elumagandla Surender (2017) [35] Discussed that the existing fuel indicators installed in vehicles like Honda, Hero, TVs, Yamaha are having the petrol indication in the form of points and analog meters, which leads to miscalculations to what distance vehicle can go with present fuel in tank. And one of the major problems with the kick fewer motor vehicles is that once battery gets discharged, the self-start motor will not respond making situation horrible to the user [23]. The latest model cars present in the market also has a fuel indicator but it is not accurate in showing the petrol quantity in the tank. some of the four wheelers like FORD, AUDI, BMW, BENZ are costly and are having huge demand in market had a distance estimator in them, which will show an average of the car's mileage for 1 kilometer. But if we go only in economy speed only the reading is appropriate [24]. If we go with the maximum speed, we may not get the exact reading that how much they can travel. To will overcome such unavoidable conditions, the pre-measure and sensor data would help user to play safe on the road. In this work, we propose a digital measurement system which constantly displays the different parameters like fuel quantity and battery health [25]. The fuel indicator which we use gives us 100% accurate result by displaying the quantity of petrol in numerical format i.e. in milliliters.

The heart of the work is the micro controller which takes necessary decision depends on the sensor feeds and displays the results in the digital format. An analog type fuel tank level sensor is interfaced to the Analog to digital controller (ADC) which converts analog voltage output from the sensor to the digital form and feed to micro controller. Then the micro controller calculates the level depends on the digital value multiplied with the volume of the tank at that level and displays the digital numeric value on the screen [26].

Roshan Jadhav (2019) [33] discussed the that in today's world reality has moved toward becoming digitized, on the off chance that we make fuel meter in the vehicle as digital it will help know the accurate measure of fuel present in the fuel tank. In our task, we have made a digital fuel meter [27]. Here, we are showing the measure of fuel present in the tank digitally. Fuel robbery is additionally an issue in everywhere throughout the world. In our undertaking at whatever point there is fuel burglary happens, because of the commotion of thief alert individuals know about fuel robbery and furthermore amid fuel robbery an instant message is conveyed on portable to the proprietor of the bicycle. This is the constant happening process [28]. The past vehicle framework doesn't have such usefulness that there is no presentation gear level whatever might be the condition through the bicycle is running or not. In any case, in our framework, we can defeat the above issue by utilizing the digital meter which demonstrates the rigging level in the enduring state or running condition of the vehicle. Keywords: Fuel Tank, Mileage, Arduino, Digital Meter, Fuel Meter [29].

Tanmoy Goswami (2017) [34] discussed that Newspapers are often filled with news of tempered petrol pumps and pump mafia cheating the common people using chips. Common bikers are usually unaware of such chips. They get less quantity of fuel than the amount they pay [30]. All bikes have fuel indicators on the dashboard but these indicators do not display the accurate value in numeric format of the present fuel inside the tank. Minimum changes in fuel level inside the tank are not reflected on display. Common Indian bikers are often unable to detect such minor changes on a fuel indicator for less than 100 ml fuel value. According to the user study, it is found that most of the bikers have less trust on indicators fuel dispenser machines of petrol pumps. This paper proposes a sensor-based fuel indicator system which is designed to indicate true fuel value inside the bike's fuel tank. The proposed prototype of True-Fill (proposed name for a micro controller-based system to indicate true value of petrol filled) system would help the common people of India to protect themselves from tempered petrol pump [31].

Mandar Milind Gijre (2017) [5] discussed that in the recent times we are constantly hearing about petrol bunk frauds. Most of the petrol bunks today have manipulated the pumps such that it displays the amount as entered but the quantity of fuel filled in the customer's tank is much lesser than the displayed value. it the pumps are tampered for the benefit of the petrol bunks owner [32]. This results in huge profits for the petrol bunks but at the same time the customers are cheated. All the vehicles in India consist of analog meters hence it is not possible to precisely know the amount of fuel currently in the vehicle and also it is not possible to cross check the quantity of fuel filled in the petrol bunk. In this work we focus on creating a digital display of the exact amount of fuel contained in the vehicles tank and also helps in cross checking the quantity of fuel filled at the petrol bunk [33]. In addition to this the work also tends to find the mileage of the bike which is a time consuming and tedious job to do manually by noting down the readings all the time and the proposed system will also show the nearest petrol pump using GPS when the fuel tank goes in reserve mode. Keywords- GPS, Hall Effect, Proteus, Ultrasonic Sensor, Serial Transmission [34].

Choudhary Saurabh (2019) [23] Discussed that Today in this digitized world, if the fuel marker in the vehicles is additionally made advanced. It will know the correct measure of fuel accessible in the fuel tank. Here, we are showing the measure of fuel in the tank in liters. This incentive in liters will be in numerical digits (ex: 1.2, 1.3 and 1.4). This work predominantly focuses about the sign of fuel level in bike tanks and predicting the user location by using latitude and longitude value which is send by GPS to the system. This work evades a great deal of issues like fuel bunks at fuel stations, fuel burglary and keeps us from getting into circumstances where we need to push our vehicles because of suppositions of the level of fuel [35]. These days the fuel pointer framework for the bikes is computerized yet they don't show the correct measure of fuel which is available in the tank i.e., they demonstrate the measure of fuel as far as bars and not in numbers or digits like liters or Milliliter. So, this issue is contemplated for our work of building up the computerized (numeric) fuel pointer framework for bikes which indicates correct measure of fuel regarding Liters (L) or Milliliters (ml).

J Vignesh (2017) [30] Discussed that the precision is always being whole heartedly welcomed by the people all over the world. It has an important application in the field of automobiles to measure and verify the fuel present in the vehicle with high degree of precision. The previous techniques use analog strip or capacitive sensor which is either inefficient to measure or too costly to install. In the proposed method, two Flow sensors are placed linearly, one sensor to measure the amount of fuel entering the tank and another sensor to measure the amount of fuel leaving the tank to the carburetor. The difference between the above measures gives us the amount of fuel present in the tank and it is stored in the Arduino Uno micro controller. It actively keeps the record of the fuel entering the tank and the fuel present in the tank at any given time in the dynamic memory of the Arduino and is displayed using LCD display. If the fuel is low, the system suggests the commuter to refuel as soon as possible. If the fuel gets critically low, the system alarms the commuter to refuel immediately. The system has a solenoid valve which replicates the working of a carburetor of the automobile. This proposed method can identify petrol theft and is useful to people who opt for long rides. This system is designed to cut down the cost and increase the level of accuracy.

Pranjal Srimati (2013) [2] discussed that There are many sensor based techniques available in the market to measure the liquid level and gives you a close idea of quantity of the liquid, however can provide you an exact approximation of quantity as in cars by fuel meters by which we can get an idea of whether tank is full, half full or empty etc. The liquid level detector and optimizer play an important role in tanks to indicate the level of liquid of a particular density. In this paper we have proposed a technique to measure the amount of liquid available in tank also give the knowledge about their chemical composition as well as purity level of fuel & it is the first device which can give the accurate knowledge about of how much the vehicle can run. This device digitally displays the level of liquid inside the tank, fuel composition & running capability of vehicle by using load sensors. The measurements are taken so the accuracy level is of 95% - 98%. Thus, it is an efficient device made by keeping in mind the petroleum thefts at the various petrol pumps at the time of filling of tanks.

Vaibhav N. Ghenand (2018) [17] discussed that in this 21st century almost everything has become digital, if the fuel indicators in the vehicles is additionally made advanced, we can determine the correct quantity of fuel available in the fuel tank. Hence, this system will be indicating the amount of fuel in the tank in milliliters. The indication of fuel will be in numerical digits (ex: - 100ml, 200ml and 1000ml). This system mainly focuses about the indication of fuel level in car, trucks or diesel occupied tanks. This work allows us to get rid of issues like fuel theft at fuel stations, fuel adulteration and keeps us from getting into circumstances where we may get into inconvenient situations due to unspecified level of fuel. Current systems contain the fuel indication mechanism for the automobiles which are computerized yet they don't show the correct amount of fuel which is available in the tank i.e. they demonstrate the measure of fuel in as bars and not in numbers or digits like liters or Milliliter. So, this issue is considered for our work of building up the digital (numeric) fuel indication mechanism for automobiles which indicates correct measure of fuel in Milliliters (ml).

Mr. Senthil Kumar. R (2017) [31] The focus of the work is in line towards the future development of automobile system, wherein vehicles will be operated with Global Positioning System. We developed a system to find the factor for fuel consuming with on-time reading in the monitor and also this system suggests the driver to use the fuel optimally by regulating the speed of vehicle. Two separate petrol engines are used for the analyses. One engine is placed with two-wheeler and another with a four-wheeler. This work of Fuel Monitoring System is an initial step for better fuel management and also becomes the scope of our work. The data collection with sensors and also by implementing the micro controller is done at different speed range and also with different load condition. Based on the inference from the collected data suggestions are made for better utilization of the fuel. Equation has been developed between the economic factor and its influencing factors like load and speed. In future we hope that this engine performance monitoring will be highly helpful for automation.

Vijaya Kumar P (2018) [3] discussed that in today's fast paced world, monitoring systems are necessary to track the changes in the environment for better understanding of current scenarios and predictions thereof. The same is true for fuel tanks in vehicles as well. By keeping strict track of fuel intake and consumption, vehicles can be made more fuel and cost efficient. This can be done using remote monitoring and data collection systems deployed at the site of the fuel storage tank. This proposed monitoring device is built on Atmega16 computer that takes fuel tank level information from its sensors and analyses this data at the sensor edge to find patterns using edge analytic technology. These patterns and data are streamed to the internet, either an android app or a website. This paper presents the implementation of such a monitoring system based on Internet of Things (IoT) technology to protect the fuel customers from theft at the gas stations and formulate better conservation strategies.

Rahul S. Vaidya (2015) [18] discussed that Today in this digitalize world, if the fuel indicator in the automobiles is also made digital it will help to know the exact amount of fuel available in the fuel tank. The above furnished fact is considered in our work and we found out a proper solution for indicating the accurate availability of fuel in the tank digitally. A Liquid pressure transducer is used to find out the fuel level which is economic and also accurate. The added Feature in this fuel level indicator is that, the reserve condition is pre-informed to the user with an alarm, which helps to tune it to the reserve position before the engine stops and this helps to avoid knocking and engine damage. This work mainly concentrates about the indication of fuel level in irregular tanks (two-wheeler and four-wheeler tanks). Various other features like the distance covered, mileage obtained, can be added with this arrangement which explains the clear performance of the vehicle and the fuel used. We can also predict the time for refueling the vehicle and also to check the amount while fueling can be done in future. By using this digital fuel level indicator device, the amount of fuel available in the tank at any position of the vehicle is predicted. The calculation is based on the principle of liquid pressure through which the pressure of Vented fuel available in the tank is found out and the accurate amount of fuel in the tank is displayed in the scale of liters.

Anirudha Mule (2016) [32] discussed that in recent day's world has become digitized, if we make fuel meter in the vehicle also digital it will help to know exact amount of fuel present in fuel tank. In our Work we have made digital fuel meter. Here, we are indicating amount of fuel present in tank digitally. That value is in numerical digits (ex: 1lit, 1.5 lit, 2lit etc.). Fuel thefting is also measure problem all over the world. In our work whenever there is fuel thefting, due to the noise of burglar alarm people are aware of the fuel thefting and also during fuel thefting a text message delivered on mobile to the owner of the bike. This is real time occurring process. The previous vehicle system doesn't have such a functionality that there is no display gear level whatever may be the condition though the bike is running or

not. Disallows any new person on bike to adjust the gear level. But in our system, we can overcome above problem by using digital meter which show the gear level in steady state or running state of vehicle.

Rishabh Neogi (2016) [26] Discussed that on the digital indication of fuel in vehicle's tank. System on smaller scale wherein 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 converter which converts analog value to digital value which is further read by the micro controller (which is flash programmable and erasable ROM). At last, the micro controller gives the result of the amount of fuel in the tank which is displayed on an LCD screen. The system as a whole is connected to a battery.

2.1 Proposed System

The proposed system produces the concept of digital fuel indication system for our University Transport. In our work, two sensors that is flex sensor and flow sensor detects the exact quantity of the fuel available in the fuel tank. The flex sensor measures the flexibility and as the fuel passed through the flow sensor then the flow sensor will tell us the quantity, measurements, latitude and longitude and send this all information to the owner through GSM (Global system for Mobile communication). As the flow sensor is activated the GPS (Global Positioning System) will send the location, timing to the owner. Thus, these important factors of quantity, flexibility, location and security for our university transport are determined. It gives the exact/accurate amount of the fuel containing in the fuel tank. It can calculate the mileage of the vehicle. It also sends the location of our university transports to the owner by using latitude and longitude value. We have used 16*2 alphanumeric LCD (Liquid Crystal Display) which display the quantity of the fuel available in the fuel tank in digital values. It also shows the variations in petrol level. It also shows the mileage of the fuel.

3. Methodology

The work methodology is proposed in Figure 1. The system is operated using a power supply that will energize all components that supply of 5V is used in the work. Arduino is used a development board to control all the feature of the proposed system. In addition, other components such as; water flow sensor, IR sensor, GSM module and level sensors are used to detect the level of substances that can flow.

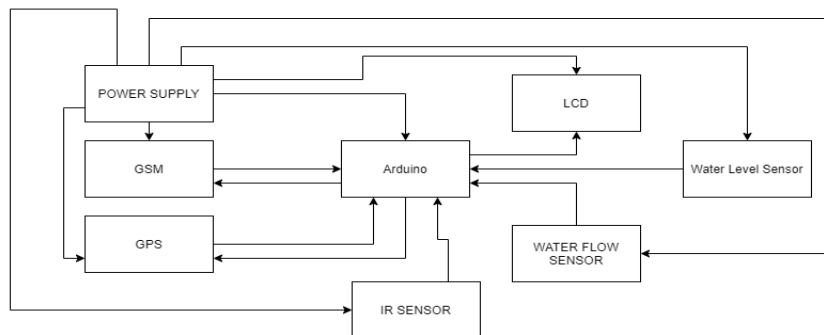


Fig. 1 – Methodology of the proposed system

IR sensor is placed at fuel tank's opening fuel tank door to get information about opening and closing of fuel tank door of the fuel tank. We will observe the resistance before and after reopening and closing of the fuel tank door of the fuel tank and we will set a threshold value for opening and closing of fuel tank door of fuel tank. As the fuel tank door is opened the value will starts increasing from its threshold value and we will be able to get the reading in the system about opening of the fuel tank door Then Flow sensor will starts working as fuel is being filled. The filled fuel will flow from the flow sensor to the tank and our system gives us the readings about quantity of filled fuel in liters. We will set different levels for level sensor to get the fuel level present in the tank and then we will be able to calculate the mileage accordingly. The quantity of fuel that flowed from the flow sensor (in liters) will be send to owner through message for the location from where the fuel is filled, we have GPS module for that. Owner will get message about the quantity of fuel that was filled in liters and location also from where the fuel was filled. All the readings will be shown at LCD.

4. System Design

The system design approach is carried out using the hardware design. The hardware design consists of various components such as; flex sensor, IR sensor, water level sensors, GSM, GPS, Arduino Nano, LCD. The flex sensor measures the bend or amount of deflection or bending. Usually, the sensor is stuck to the surface, and resistance of

sensor element is varied by bending the surface. The flow sensor is an electronic device that measures or regulates the flow rate of liquids and gasses within pipes and tubes. Flow sensors are generally connected to gauges to render their measurements, but they can also be connected to computers and digital interfaces. GSM module is used for global system for mobile communication (GSM). A GSM module digitizes and reduces the data, then sends it down through a channel with two different streams of client data, each in its own particular time slot. The digital system has an ability to carry 64 kbps to 120 Mbps of data rates. LCD is used for display to show on and off electronically while using liquid crystals to rotate polarized light. Arduino Nano is used as a development board that functions a Microcontroller board to control all the hardware components as shown in Figure 2.



Fig. 2 – Arduino Nano used in the proposed system.

Arduino IDE is used as simulation tool order to program the hardware components of proposed system. It offers an editing for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino and Genuine hardware to upload programs and communicate with them.

5. Results and Discussion

This section includes results obtained from the hardware of this work, results achieved from the analysis of digital fuel indicator system is as the status of fuel is sensed by the level sensors, according to the status of fuel level, the quantity of available fuel present in fuel tank and mileage according to that available quantity will be shown on the LCD. Driver will also be aware of opening of door of fuel tank as the status will be displaced on LCD. After refueling the quantity of filled fuel and location from where the fuel was filled is send to owner through SMS.

5.1 Fuel Tank Door Open

When the door of the fuel tank is opened, the IR sensor sense it and send information to Arduino as IR sensor is connected to Arduino, received information is analyzed by Arduino and result is shown in LCD as in Figure 3 “Door is Open”. The status of opening of fuel tank door will be displayed at LCD.

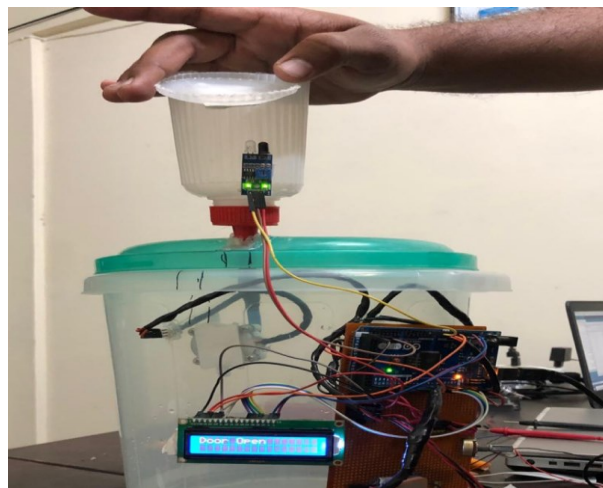


Fig. 3 – Door Open

5.2 Empty Tank

When the fuel level of the tank is empty, the status of fuel is sensed by the level sensors, according to the status of fuel level, the quantity of available fuel present in fuel tank and mileage according to that available quantity will be shown on the LCD, as shown in the Figure 4 “fuel level = 0L, Mileage = 0km”.

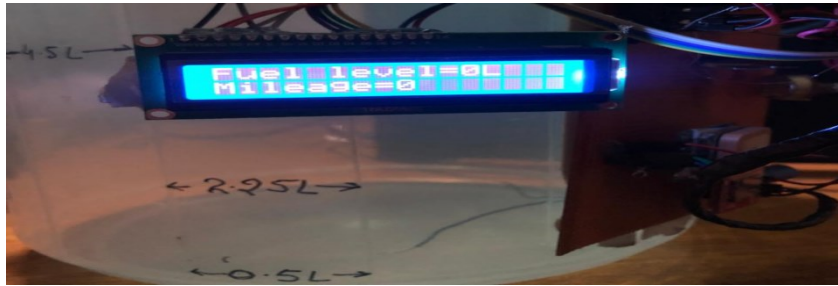


Fig. 4 – Door Open

5.3 Low Fuel

When the fuel level of the tank is low, the status of fuel is sensed by the level sensors, according to the status of fuel level, the quantity of available fuel present in fuel tank and mileage according to that available quantity will be shown on the LCD, as shown in the Figure 5 “fuel level = 0.5L, Mileage = 0km”.

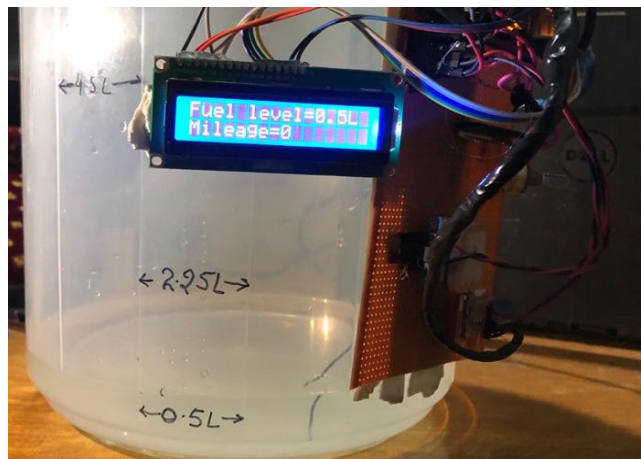


Fig. 5 – Low Fuel in Tank

5.4 Full Fuel

When the fuel level of the tank is full, the status of fuel is sensed by the level sensors, according to the status of fuel level, the quantity of available fuel present in fuel tank and mileage according to that available quantity will be shown on the LCD, as shown in the Figure 6 “fuel level = 4.4L, Mileage = 43km”.



Fig. 6 – Full Tank

5.5 Received Message

Owner of the vehicle received the message of filled fuel quantity and location from where the fuel was filled, as shown in Figure 7 Received Message

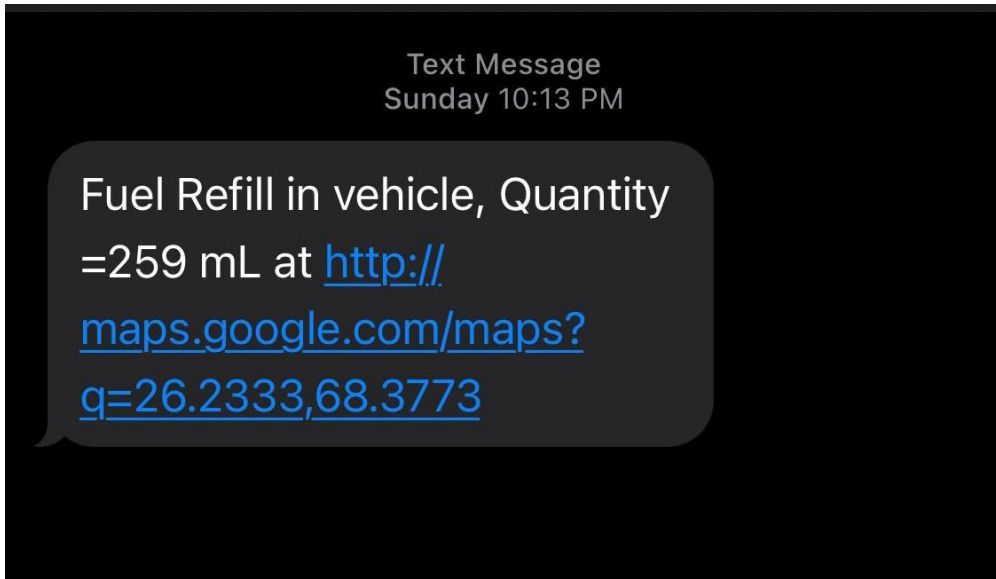


Fig. 7 – Received Message

5.6 Location of Refueling

Owner received the message of filled fuel quantity and location from where the fuel was filled, location link is received by owner of vehicle after clicking link owner get location in Google maps, as shown in Figure 8.



Fig. 8 – Location of Refueling

6. Conclusion and Future Work

Analog system in our university (Quaid-e-Awam University of Engineering Science and Technology) transport system is present, which shows the amount of the available fuel in the fuel tanks by means of indication like “Bars” moving through E(Empty) and F(Full) so it does not tell us the exact amount fuel in the tank. Therefore, there is need

of the digital system which could minimize these problems and calculate the fuel consumption. Also, it does not calculate the mileage of the vehicle. Thus, we have arrived the concept of digital fuel indication system for our University Transport. In our work, two sensors that is flex sensor and flow sensor detects the exact quantity of the fuel available in the fuel tank. The flex sensor measures the flexibility and as the fuel passed through the flow sensor then the flow sensor will tell us the quantity, measurements, latitude and longitude and send this all information to the owner through GSM (Global system for Mobile communication). As the flow sensor is activated the GPS (Global Positioning System) will send the location, timing to the owner. Thus, these important factors of quantity, flexibility, location and security for our university transport are determined. It gives the exact/accurate amount of the fuel containing in the fuel tank. It can calculate the mileage of the vehicle. It also sends the location of our university transports to the owner by using latitude and longitude value. We have used 16*2 alphanumeric LCD (Liquid Crystal Display) which display the quantity of the fuel available in the fuel tank in digital values. It also shows the variations in petrol level. It also shows the mileage of the fuel. The time that is required for this operation is very less. The cost of our work is not too much it can be implemented in all vehicles without much increment of the cost. Here, we conclude that the required aims/goals and objectives of our work have been achieved. We are very glad to present our work "Digital Fuel Indicator for QUEST Transportation System". We feel that our work serves something good to our university and if our university permits us, we'll definitely implement this in our university transportation system. And if it works well then, we'll happily like to present it before this prosperous world. This work can be used in all transportation organizations. It can be used in many industries or companies which have buses, vans, coasters and caps for their employees. This system can be fitted in the transportation buses to detect the petrol theft. It can be used in travel companies. This work is adaptable to all types of vehicles to indicate the amount of fuel in the fuel tank. Capable to produce a numeric readout of the fuel left in the fuel tank. It can be used in vehicles to know the quantity of petrol available in the fuel tank. This system can be used of security purpose in vehicles to avoid the petrol theft.

In future we can implement this work with voice feedback system. Or we can add vibrations sensor to the vehicles. In case when the vehicle locked and someone is trying to open the door or open the vehicle lock then vibration will be produces and vibration sensor can sense these vibrations and turn on the buzzer. In future this work can be improves by adding fuel cells at different places of fuel tank to measure exact fuel level at different conditions like banking of road for particular densities at different altitude conditions of vehicle and a buzzer to notify the owner about the conditions like low level, half level and full levels of the fuel tank to refill or warn themselves.

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