

Fuel Data Monitoring System

Dr.Kishore M¹, Hinduja R², Feba M Joseph³, Hema N G⁴
^{1, 2, 3, 4} ATRIA INSTITUTE OF TECHNOLOGY

Abstract- To develop a automatic fuel data monitoring system for vehicles. Monitoring of fuel going inside the tank during fuel filling process is a difficult task. With the help of this system fuel going inside the tank when the fuel is being filled and consumed by vehicle engine can be monitored. This type of system can be used to measure the amount of petrol, diesel or some other type of liquid in the vehicle tank. The purpose of this device is to prevent fraud in petrol pumps where in some cases the quantity of fuel displayed in the filling machine is not the actual quantity of fuel going inside the tank. This situation occurs in few petrol pumps as the filling machine is tapered by the owner or the employee of the pumps and the customers get cheated. Hence, this device when installed in the tank of a vehicle prevents the customer from getting cheated.

I. RELATED SURVEY

1. FUEL MONITORING AND VEHICLE TRACKING:

Author-Sachin S. Aher, Kokate R. D.

In present scenario consumption of fuel is not sustained, which results in capital loss. To overcome this Sachin S. Aher, Kokate R.D make an attempt to implementing a monitoring of fuel and vehicle tracking system using Microcontroller. Microcontroller used was MSP430F149 and to track the vehicle GPS technology was used. Microcontroller MSP430 is a ultra low power, 16 bit RISC architecture controller. It contains inbuilt 12 bit ADC, serial communication interface. In this paper microcontroller based embedded control system was implemented. The embedded control system can attain several task such as Fuel monitoring and vehicle tracking. In the system reed switches senses the amount of fuel filled and consumed by the vehicle uses the principle of hall effect. Several logs of this record was stored in system memory. RTC and GPS technologies was being used to track the time and vehicle respectively. Examining interactive maps and GPS vehicle tracking technology permits to see where it was losing money, time and wasting fuel (such as on duplicated journeys).

2. FUEL MONITORING SYSTEM FOR FUEL MANAGEMENT:

Author-Yen-Jen Chen, Chia-Hung Chien.

Yen-Jen Chen, Chia-Hung Chien made use of FMS for developing a system for monitoring of fuel consumption. Fleet Management System (FMS) has more attention among industrial field since it is a highly applicable system. In this paper FMS based system was designed which precisely monitors and calculates the fuel consumption. The Vehicle Tracking System (VTS) on front end and Management Server (MS) on the back end together form FMS. Based on many well-known technologies such as Global Positioning System (GPS), Mobile Telecommunication Technology of GPRS or 3G and On-Board Diagnostics II (OBD-II) VTS was established and installed into the vehicles. By the use of GPRS/3G technology and TCP/IP communication protocol, vehicle operation real-time data are obtained from the positioning information GPS can be sent back to the MS. The MS includes Data Collector (DC) and Web Server. The DC gathers the data which VTS sent back and Web Server calculates and determines the vehicle present situation according to data. The results are also presented on websites by the web server. In this paper, the fuel consumption status of vehicle could be performed.

3. ARDUINO BASED DIGITAL FUEL GAUGE AND VEHICLE MONITORING SYSTEM:

Author-NITESH.K.A, LOHITH.B.N

To measure the accurate level of fuel filling during the fuel filling process Nitesh.K.A and Lohith.B.N developed a Vehicle Monitoring System. The system includes Pressure sensor which is fixed below the fuel tank this measures the fuel level at any point continuously with the help of processor and display unit is used to display the value in digital numeric form. Thus the measured data quantity and location of fuel filled is sent to the owner through GPS and GSM and now the vehicle owner will be aware of fuel consumption through the SMS services provided. The development of low cost system is proposed in this project which provides solution to the existing automobile control issues. The system record the relevant details about vehicle using the alcohol sensor and temperature sensor which detects alcohol content consumed by the driver and engine temperature. The system also includes seat belt warning system and also includes collision sensor that detects the accident and location of accident is sent to the owner through GPS and GSM technology.

4. FUEL THEFT DETECTION:

Author- Mahendra Chourasiya, Dattatray Shinde, Ajeet Kaulage Miss. B. R. Thawali.

Presently most of the people have their own vehicles as per the growing technology so is the theft of fuel occurring at place where there is no security such as CCTV at parking where security is more in its most concern. In order to overcome this situation the system called fuel theft detection was implemented using Microcontroller. The system basically uses an embedded system based on GSM and LPC2148 μ C which is an ultra-low power, RISC architecture controller containing inbuilt 10-bit ADC serial communication interface. In order to keep track of time a RTC is being preferred. Programming a GSM module in order to report fuel theft detection automatically via GSM communication. The main key is to introduce mobile or cell phone into embedded system as the designed system is easy and low cost. The idea of the project also helps the owner to know the theft occurrence where the heart of the system is ARM7LPC2148 and GSM using the real-time to report the response.

5. MODIFIED TYPE IN INTELLIGENT DIGITAL FUEL INDICATOR SYSTEM:

Author-Nitin Jade, Pranjal Shrimali, Asvin Patel, Sagar Gupta.

This project is developed as to modify intelligent digital fuel indicator system based on several techniques available in the market in order to indicate and measure the level of liquid and quantity of it giving approximate level in vehicles by fuel meter which shows as to whether the tank is full, half or empty. The fuel level indicator/detector and optimizer plays a key role to measure the level of fuel of certain density. The purity can be measured by this technique also the idea of their chemical composition where the level of fuel is displayed inside the tank and capability by use of load sensors and therefore producing 95-98% of accuracy level.

6. FUEL GAUGE SENSING TECHNOLOGIES FOR AUTOMOTIVE APPLICATIONS:

Author- Vinay Divakar.

Based on complexity, performance and cost of development comparison is done between the traditional fuel gauge system and the smart fuel gauge system. The paper also discusses about their principle of operation. Due to some issues identified in the existing techniques a finer substitute sensing technology has been proposed, reported and justified. The Microcontroller based float type measurement and the traditional techniques yet lacks precision because of fuel splashing in the tank unless float sensor is serialized with respect to the curves and size of the tank. Provision of

strikingly accurate measurement of the level of fuel in the tank is achieved by the capacitive level sensing system that uses inclinometer and microprocessor which has inbuilt corrective action code applied to the fuel sensor which is a well organised and well founded sensing technology.

II. PROPOSED METHODOLOGY

The main perspective of our project is to provide an easy way to track the activities of the employee. The block diagram of fuel monitoring system includes ATMEGA LM328 which is a 16-bit Microcontroller captures the data from the sensors and send the serial data to Wi-Fi module (NODMCU ESP8286), GSM module (SIM900V1) and LCD display. Fuel flow sensor 1 is fixed at inlet of the fuel tank which senses the flow of fuel into the tank and fuel flow sensor 2 is at the outlet of fuel tank and inlet of the engine which senses the amount of fuel consumed by which measures the fuel level in the tank and IR sensor senses the car meter to check if there is any manipulation of meter done by driver. Wi-Fi module receives serial data (sensed) and transfers it to the cloud committee (THING SPEAK). GSM module provides the SMS service to the owner. All these activities are carried out in real-time.

III. CONCLUSION

This project has major importance in automobiles with present scenarios of being cheated by the petrol bunks and drivers. Although the microcontroller based technique is more accurate when compared to the traditional methods but still there is lack of accuracy due to fuel splattering into the tank unless flow sensor is registered with respect to the size and curves of the tank.

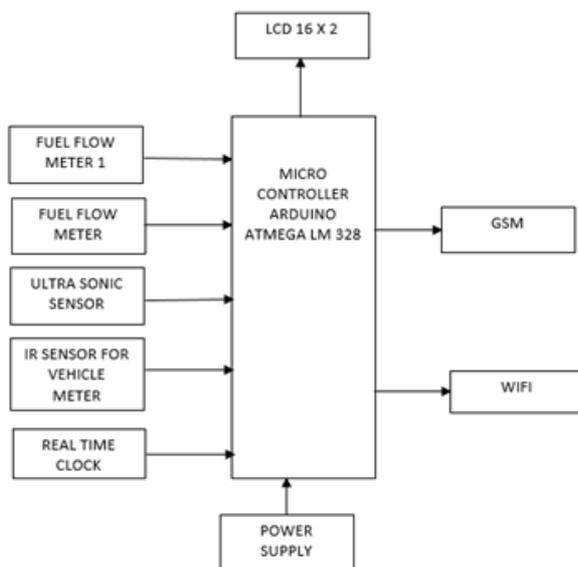


Fig. Block Diagram of Fuel data monitoring system

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