Design and Development of Fuel Accuracy Measurement and Theft Detection in Vehicles

Bhargavi K.V[1], Vijay C H [2], Shravan v Acharya[3], Madhu B Gurav[4]

[1]Assistant professor, ECE, AIET, Mangalore, India

[2,3,4]UG Student, Dept of ECE, AIET, Mangalore, India

Abstract —This paper presents the planning, implementation and characterization of a hardware platform for stockpile indication System for vehicles. the first style goal is to plot a system capable of watching the stockpile in real time.to calculate the number of fuel filling within the tank and at petrol-stations. this method is predicated on hardware likewise as package. The Hardware half consists of stockpile circuits, on-board Arduino's modules, liquid show (LCD) and Flow Level detector. whereas the package half consists of Arduino IDE. this method measures fuel volume and sends measured volume to the owner's mobile through the GSM network. It additionally provides a way for detective work felony or fraud incidents just in case of fuel fill within the tank is a smaller amount than the specified fuel to be crammed or fuel felony from vehicle. this method permits watching of stockpile, having a reduced price thanks to reasonable and easy-to-acquire electronic elements.

Keywords-Ultrasonic fuel level sensor, GSM module, Microcontroller, LCD, Flow level sensor

displayed worth. because of these, most of the gasoline bunks house owners are becoming cash in on gasoline bunks. This ends up in large profits for the gasoline bunks owner however at a similar time the shoppers square measure cheated. Most of the vehicles incorporates analog meters thus it's unimaginable to exactly comprehend the quantity of fuel within the vehicle and additionally it's unimaginable to cross check the amount of fuel GSM being a 1 of the foremost common communication and utilized in the movable communication. they're distinctive in some ways as systems or applications is created to figure with the GSM communication because it is worldwide wont to be crammed within the gasoline tank at a petroleum bunk. during this project we have a tendency to square measure centered on making a display of the precise quantity of fuel contained within the vehicle's tank and additionally facilitate in cross checking the amount of fuel crammed at the gasoline tank and additionally offer indication of fuel stealing to the vehicle owner by causation messages and ringing calls to the owner's cellular.

INTRODUCTION
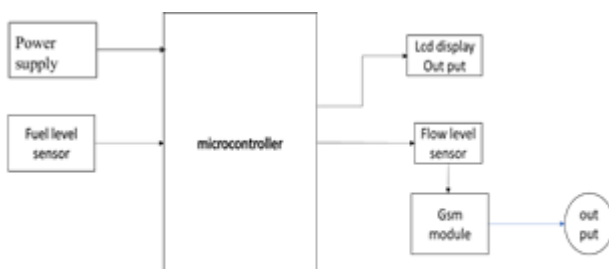
Block diagram
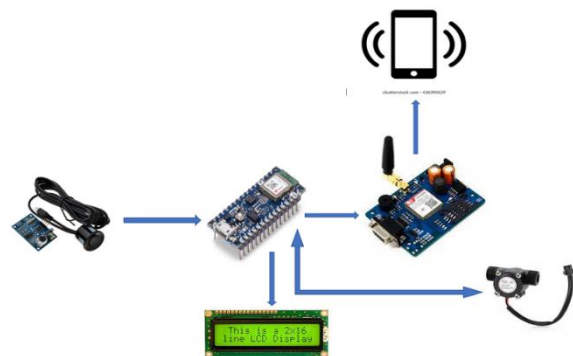
Schematic diagram

In today's era we have a tendency to square measure perpetually hearing concerning gasoline thefting. these days Most of the gasoline bunks have fraud pumps in order that it displays the quantity entered however the amount of fuel crammed within the fuel tank is far lesser than the

METHODOLOGY

The system contains supersonic detector modules, Gsm module SIM800, liquid flow detector, liquid show (LCD) to

point out the output reading. the complete system is controlled by victimization Associate in Nursing Arduino NANO Microcontroller. supersonic sensors ar characterised by low-priced and therefore the chance of getting used in environments and things wherever it's unattainable to use a lot of complicated sensors. during this work, JSN-SRO4T is Associate in Nursing supersonic electrical scientific instrument module utilized as Associate in Nursing supersonic transmitter and receiver. In our project the JSN-SRO4T acts as input to start out the measure, the trigger pin should be created high for 15uS. This action can trigger Associate in Nursing supersonic wave at a frequency of 40Hz from the transmitter and therefore the receiver can sit up for the wave to come. Once the wave is coming back once it gets mirrored by the item, the Echo pin goes high for a specific quantity of your time which is able to be capable the time taken for the wave to come back to the detector. By victimization this pulse breadth, we will live the backlog. GSM is employed for a technique communication to alert the owner of auto within the style of message and a decision ring, as regard of the fuel crammed message and conjointly if the fuel thievery happens the message and decision indication is forwarded to vehicle owner concerning the fuel thievery.in the project the flow level detector is worked as ignition of auto, if the fuel is flowing through flow level detector it's traditional state and if the fuel is decreasing in fuel tank and not flowing through the flow level detector it indicates fuel thievery from the vehicle.
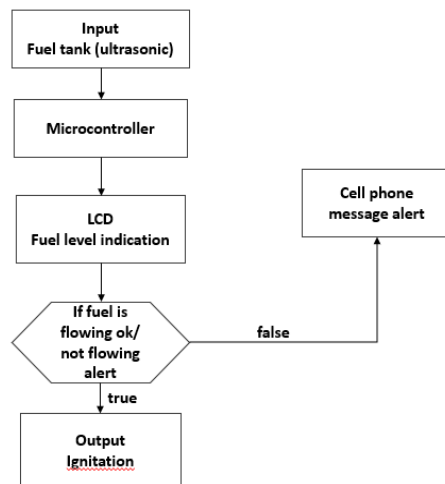
signal flow graph

Embedded System Module

Embedded system module is composed of a microcontroller unit known as Arduino Nano atmega328p, Fuel level sensor. In order to measure fuel level in the fuel tank the sensor JSN-SR04T is used which works by sending out a pulse of ultrasonic sound and measuring the amount of time it takes for the sound to come back after hitting the fuel surface. The sensor is implemented with an Arduino microcontroller for the purpose of measuring and processing the distance above fuel level.

Communication Module

This system depends on the communication module for sending a message and call indication to vehicle owners wirelessly. The GSM module SIM 800 is used for sending a message about the quantity of fuel filled in a fuel tank and also indication of fuel theft from

vehicle to the owner by a massager and a call ring if the owner is not responded to a message, then there will be a ringing call on the owner of the vehicle.

System software

Software half consists of Arduino Integrated Development setting (IDE). Arduino IDE may be a cross-platform application (for Windows, macOS, Linux) that's written within the artificial language Java. It originated from the IDE for the languages process and Wiring. It includes a code editor with options like text cutting and pasting, looking out and substitution text, automatic indenting, brace matching, and syntax light, associate degreed provides easy one clicks mechanisms to compile and transfer programs to an Arduino board. It additionally contains a message space, a text console, a toolbar with buttons for common functions and a hierarchy of operation menus. The ASCII text file for the IDE is free below the antelope General Public License, version 2.

The Arduino IDE supports the languages C and C++ exploitation special rules of code structuring. The Arduino IDE provides a software system library from the Wiring project, that provides several common input and output procedures. User-written code solely needs 2 basic functions, for beginning the sketch and therefore the main program loop, that square measure compiled associated coupled with a program stub main () into an possible cyclic supervisory program with the antelope tool chain, additionally enclosed with the IDE distribution. The Arduino IDE employs the program to convert the possible code into a computer file in hex coding that's loaded into the Arduino board by a loader program within the board's computer code.

Summery

The summary of our project is to help the vehicle owner by preventing a fuel theft at petrol bunk as the fuel filled in the petrol tank is less than the required fuel at the petrol bunk, the components used in the fuel level measurement is ultrasonic sensor gives an accurate reading which is displayed on liquid crystal display and GSM module is used to inform the vehicle owner about the fuel filled in fuel tank by sending a message and if fuel theft occurs from vehicle the system helps the vehicle owner by sending message and making a call to a cell phone.

REFERENCES

[1] Rahul Goga beer, Summit Sona wane, Om Swami, Prof.S.S.Nikam." fuel Level Detection victimization unhearable Sensor". International Engineering analysis Journal (IERJ) volume two Issue two page 848-850,2016, ISSN 2395-1621.

[2] P Senthil Raja, Dr.B.G.Geetha ."Detection of petrol thieving In significant Vehicles". International Journal of Advanced Engineering Technology E-ISSN 0976-3945

[3] Pallava Bendre, Urmila Biramole, Indrajeet Dinde, religious mystic Shelke, Sajjan Siddha Hindu deity." GasolineTheft Protection and Indication"International Journal of Innovations In Engineering analysis And Technology [IJIERT] ISSN:2394-3696,Volume 5,Issue 4,Apr-2018.

[4] Manisha Inayat, Minatare, PriyankaGadewar, Hindu deity Barde, AkshayMohurle, Suchitha S Kamble." GSM based mostly Vehicle petrol observation and thieving Detection System with SMS Indication". International Journal on Recent and Innovation Trends

in Computing and Communication system, Volume: five Issue: one ISSN: 2321-8169.

[5] Mahomet Y Aasalem, Wazir Zada Khan, Wajed and Nasrullah Armi," An int, WazirZada Khan, WajebGharibi and Nasrullah Armi." AN Intelligent Oil and well observation System supported the net of things".2017 International Conference on radiolocation, Antenna, Microwave natural philosophy and Telecommunications. Farasan

Networking science lab, schools of data system and engineering Jazan University Jazan, Kingdom of Asian nation.

[6] Mrs.AnuradhaBakare, Gayatri Pai, Metalizing, ShubhadaRandive, Nikita Atale." opposed GasolineTheft Checker System".International analysis Journal of Engineering and Technology (IRJET) volume :07 Issue:02 Feb 2020.

[7] Mr. Ravindra S. Lahane*, Mr.NileshPawar, Swapnil Ghugardare."Analysis and style Of petrol thieving interference And Automation". International Journal of Engineering Sciences and analysis Technology applied science Department, D Y Patil school of Engineering, Akurdi, Pune -411044.

[8] Rajesh Krishnaswamy, Ramkumar Swathi, Boom Jayapal AN, Karthikeyan, Mohamed Nowak." Automatic petrol observation System "International Journal of

[8] Rajesh Krishnaswamy, Ramkumar Swathi, Boom Jayapal an, Karthikeyan, Mohamed Nowak." Automatic Gasoline Monitoring System "International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-8 Issue-4S2, December 2019.

[9] Komal D/o Shoukat Ali Khuwaja, BrohiArif Ali, Vlad O. Mihalca and RaduCatalinTarca," Automatic gasolineTank Monitoring,Tracking And Theft Detection System".MATEC Web of Conferences 184, 02011 (2018) Annual Session of Scientific Papers IMT ORADEA 2018.

[10] Ortega Exozodi and Godswill alga," Automated Volume Measurement, Adulteration Detection, and Tracking of Petroleum Products". SPE-203694-MS