

WSN Based Fuel Level Detection and Dispensary Monitoring System for Moving Vehicles

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Abstract— Now day's vehicle fuel fraud by fuel thief take place frequently at remote places which causes huge loss of fuel. Our project gives the solution to this problem. The purpose of our project is to detect fuel level from fuel tanks can remotely be controlled and monitored in order to provide a cost - effective solution to a unique challenge of fuel shortage. In this system the Sensor sense the fuel level if that level exceeds. GSM modem works as sim card which provide internet connectivity and can be used for sending and receiving message. The normal condition will be sent as a Message through using WEB API then transmits the information to PC which is also displayed in monitor at remote area through web services. We are going to use magnetic reed relay, permanent magnet transistor sensors. The reed switch is an electrical switch operated by an applied magnetic field. Reed switches are widely used for electrical circuit control, particularly in the communications field.

IndexTerms—Remote monitoring, Sensor, GSM net-connector, Web service

1. Introduction

Now day's vehicle fuel fraud by fuel thief take place frequently at remote places which causes huge loss of fuel. Our project gives the solution to this problem. The purpose of our project is to detect fuel level from fuel tanks can remotely be controlled and monitored in order to provide a cost - effective solution to a unique challenge of fuel shortage. In this system the Sensor sense the fuel level if that level exceeds. GSM modem works as sim card which provide internet connectivity and can be used for sending and receiving message. The normal condition will be sent as a Message through using WEB API then transmits the information to PC which is also displayed in monitor at remote area through web services. We are going to use magnetic reed relay, permanent magnet transistor sensors. The reed switch is an electrical switch operated by an applied magnetic field. Reed switches are widely used for electrical circuit control, particularly in the communications field.

2. Literature Survey

A literature review is a critical and an evaluative summary of the themes, issues and arguments of a specific clearly defined research topic obtained from the published (and unpublished) literature. Fuel level Monitoring task has been attempted through many different approaches like 2 fuel level detection and fuel fraud detection. [3] Bingchuan Yuan and John Herbert in 'Web-based Real-time Remote Monitoring for pervasive Healthcare' The paper discusses the application in the context of the overall CARA healthcare architecture, and presents results of some experiments using the application. This system can continuously measure physiological signals and either process the data locally at a basestation or stream the data to a remote location in real-time. [4] Soyoun Hwang and Donghui Yu in 'Remote Monitoring and Controlling System Based on ZigBee Networks' propose the design and implementation of a remote monitoring and controlling system using ZigBee networks. This system targets a home network. Web services and a smartphone are used for the client system to monitor and control the home. This system can be applied in many areas such as elderly protecting systems, cultural heritage or forest fire monitoring systems, managing systems for agricultural cultivation and so on. [6] G. V. Satyanarayana and SD.Mazaruddin in 'Wireless Sensor Based Remote Monitoring System for Agriculture Using ZigBee and GPS' in this paper it is proposed to design, develop and implement a wireless sensor network connected to a central node using ZigBee, which in turn is connected to a Central Monitoring Station (CMS) through General Packet Radio Service (GPRS) or Global System for Mobile (GSM) technologies. The system also obtains Global Positioning System (GPS) parameters related to the field and sends them to a central monitoring station. Through GPRS technologies and Web Services technology, we can realize the function of the data networking, remote monitoring, it shows that the system can meet the requirements of the temperature and humidity of soil environmental monitoring and unified management. [8] MadhuriUnde and Bharat Borkar in 'Remote Vehicle Tracking & Driver Health Monitoring System Using GSM Modem & Google Maps' A website has been developed to aid the user to track and view the vehicles' location and can be access anytime and anywhere as long as Internet connection is available.

3. Existing System

While studying existing system, we come to know that there are various systems. The existing system provide only alarming and buzzer system in car which draws attention only of the nearby peoples. The existing system is useful only if vehicle owner or driver near to vehicle. The current systems are available in expensive cars that are very high; our project extends it at lower cost affordable by ordinary people.

4. Proposed System

The reed switch is an electrical switch operated by an applied magnetic field. Reed switches are widely used for electrical circuit control, particularly in the communications field. The attributes of the Web API is time and location. And the operation of the class is sending the message. Web API crop the exact time and location at latitude and longitude and send message to the GSM Modem.(Global System for Mobile Communications, originally Groupe Special Mobile), is a standard developed by the European Telecommunications Standards Institute (ETSI) to describe protocols for second generation (2G) digital cellular networks used by mobile phones. A wireless sensor network (WSN) of spatially distributed autonomous sensors to monitor physical or environmental conditions, such as temperature, sound, pressure, etc. and to cooperatively pass their data through the network to amain location. The more modern networks are bi-directional, also enabling control of sensor activity.

A. System Architecture

In the design phase the architecture is established. This phase starts with the requirement document delivered by the requirement phase and maps the requirements into architecture. The architecture defines the components, their interfaces and behaviors. The deliverable design document is the architecture. The design document describes a plan to implement the requirements. This phase represents the "how" phase.

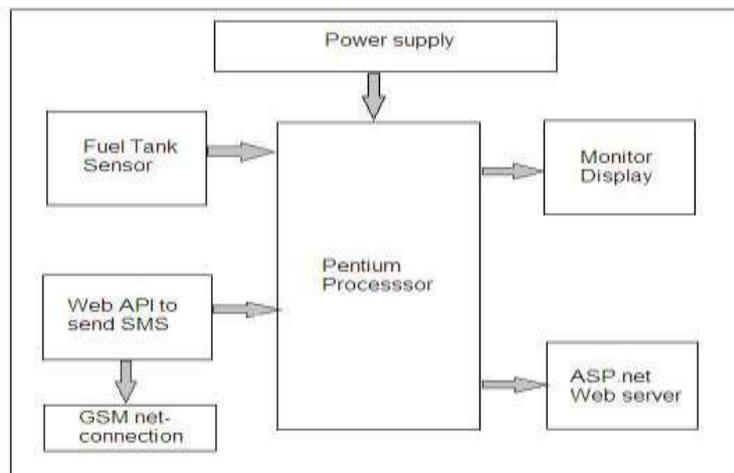


Fig. 1. System Block Diagram

Block diagram as shown in figure.1 basically describes the working of our system.

It consists of following blocks

1. Fuel Tank Sensor
2. Web API
3. GSM
4. Pentium

B. Modules Of the System

- 1) Global system for mobile communication- The GSM as mentioned in [7] reference is elaborated in figure 4.2 is developed as a replacement for first generation analog cellular networks, and originally described a digital, circuit-switched network optimized for full duplex voice telephony .This was expanded over time to include data communication, first by circuit-switched transport, then packet data transport via GPRS and EDGE. GSM is a trademark owned by the GSM association .It may also refer to the initially most common voice codec used; full rate.GSM is cellular network which means that cell phones connect to it by searching for cells in the immediate vicinity .There are five different cell sizes in GSM.

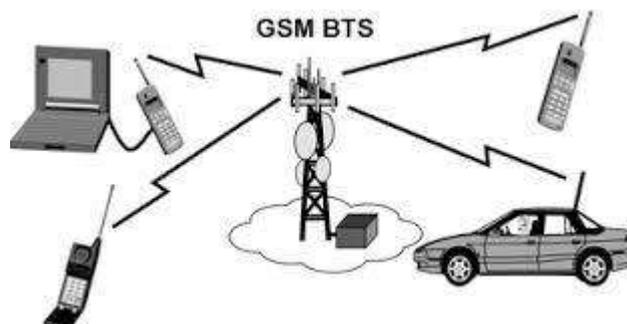


Fig. 2. GSM Modem

- 2) **Magnetic Reed Relay Sensor-** A reed relay is a type of relay that uses an electromagnet to control one or more reed switches. The contacts are of magnetic material and the electromagnet acts directly on them without requiring an armature to move them. Sealed in a long, narrow glass tube, the contacts are protected from corrosion, and are usually plated with silver, which has very low resistivity but is prone to corrosion when exposed, rather than corrosion-resistant but more resistive gold as used in the exposed contacts of high quality relays. The glass envelope may contain multiple reed switches or multiple reed switches can be inserted into a single bobbin and actuate simultaneously.

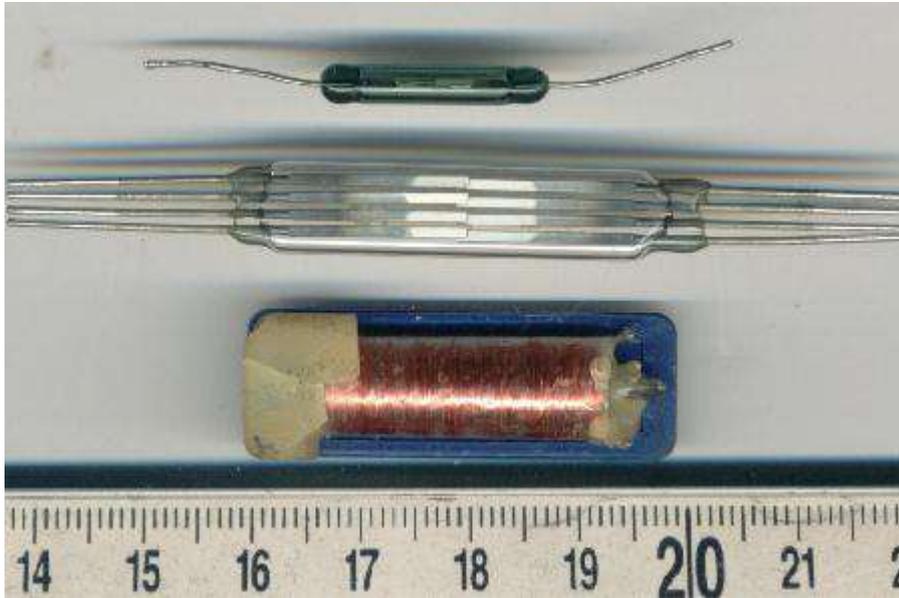


Fig.3. Magnetic Reed Relay Sensor

5. Conclusion

After going through all the detailed study about 'WSN based Fuel Level Detection and Dispensary Monitoring System for Moving vehicles' we have come to the half stage of completion of the project. We are ready with our design part of the project. In the design phase we designed the hardware module and also design the GUI of the project. And now we are working on hardware module up to this we successfully done our work. After completion of this module we will develop the software module. We also draw the required UML diagram of the project.

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