



## **Review - GSM Based Fuel Theft Detection, Temperature Alert System and Over Speed Indicator**

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### **ABSTRACT**

Petroleum is transported by rail cars automobile tankers containers and through cylindrical pipelines, which method among the above methods of transportation, will be used is determined by the amount of petroleum that is being relocated to its destination, the greatest difficulties with moving this oil are transportation and safety. Transportation through automobile is a big challenge. Maintaining temperature inside the tank, fuel theft and over-speeding is greatest challenge. In most of automobiles the temperature indicator of engine is provided but temperature of fuel, storage tank also plays an important role in automobiles safety also the over speeding of vehicle is to be taken care. This research work focus tools and technique available to overcome this difficulties and provide best solution. Various researcher work on this difficulties, here in this paper we discuss their solutions and conclude them.

**Keywords:** GSM, Arduino, Sensor, Processor, Controller etc.

### **1. Introduction:**

To manage any form of system, automation is required. Embedded design, which is a blend of computer and mechanical systems, typically with real-time computing limitations, makes it feasible. Automation is often used to operate most devices in today's world since it optimises by decreasing the size and expense of the product while increasing reliability and performance. Embedded systems use microcontrollers and can range from small devices to big installations, as well as massive sophisticated systems. Vehicle control, such as message transmission of non-conflicting messages, need a specialised internal communications network. Gasoline theft, early dry out, fuel leakage, inappropriate fuel usage in engines, and disagreements during vehicle fueling are all prevalent problems in the transportation sector. These concerns result in a significant drop in gasoline levels, putting the authorities in serious danger.

#### **1.1 Fuel theft detection:-**

Because gasoline theft is a huge concern for owners and drivers, it has a significant influence on the authorities. It is a local mistake that happens in the conveyed vehicle because fuel theft allows unauthorised individuals to benefit. Because it causes investors to lose a lot of money, but it also makes it easier for people to engage in illicit activities. The suggested technology looks to see how much gasoline has been stowed away. It investigates all areas of gasoline theft and alerts authorities via text messaging. This methodical approach, along with new tools, will help to effectively curb fuel theft, which will be a gift to our community.

#### **1.2 Over speed indicator:-**

Many road accidents occur as a result of rash driving across the world. In India, a total of 4, 73,084 road accidents were reported in 2001. Because there are no mechanisms to manage or monitor the speed of automobiles on Indian roads, the traffic population has expanded significantly. This method has shown to be quite successful in detecting excessive speeding. It is not required that such incidents occur as a result of driving while inebriated, as even someone who has not drunk alcohol might drive recklessly. To address this issue and reduce the number of people killed in car accidents, new and creative speed enforcement equipment is required.

#### **1.3 Temperature alert system in vehicle :-**

Transportation of a petroleum product from one place to other is very tough task. Petroleum products are highly flammable in nature. Because of this property of a petroleum products the temperature inside the tank should be constant and under the control position.

As the solution of that we should have a device to continuously major and real time data of temperature to the authority so that we

can detect and manage the various situations according to the data we receive.

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## 2.LiteratureReview

**Kaushik et al [1]**Anti-burglary systems for vehicles have been created using a thumb imprint to unlock the doors. Thumb impressions of authorised users are saved in the system's database. If the database's fingerprint matches the one in the vehicle, the engine will start. Anyone who gains illegal entry to the car will be prevented from refilling the gasoline tank because the relay bolt on the tank will empty the tank of petrol while also sounding an alert that the vehicle is being stolen.

**S S Pethakar et al [2]**employs a taxi-like car security system that includes GSM, GPS, and RFID. In order for the system to locate the vehicle, the worker must use the RFID card with the assigned identification number to start the vehicle. If the number matches one in the database, GPS and GSM kick in, and an SMS is sent to the vehicle owner informing them of the vehicle's position. In the event of an accidental theft, the owner can send an SMS to the GSM to lock the doors of the car.

**Nagaraja et al [3]**the ignition system makes use of a GSM system, a Microcontroller, and a relay switch. As soon as the Microcontroller detects a theft, it activates GSM to send a text message, which is subsequently followed by activation of a relay switch.

**Alkheder [4]**makes use of the Google Earth programmer and a GPS-GSM system. In order to send an SMS to the owner, the GPS module in the car communicates with the GSM system. Google Earth may be used to locate the vehicle's latitude, longitude, and speed when the owner receives a text message.

**Al-Naamany et al. [5]**Oil, emulsion, and water levels may now be measured using an ultrasound-based approach. A compact, programmable ultrasound-based multilayer level monitoring device is used to generate a feed forward neural network. As compared to existing technologies, this one offers greater precision, lower prices, simpler setup, and nonionizing radiation in addition to contactless distance measurement. In addition to the object material and surface independence, this technology has the benefit of not being sensitive to a dusty or smokey atmosphere. Preliminary testing has been completed on the gadget.

**D. Narendar Singh et al [6]**Vehicle thefts are on the rise as a result of the unstable climate. In order to avoid vehicle theft, luxury car manufacturers must verify the owner's authorisation and incorporate an anti-theft system. The suggested solution for intelligent automobiles to minimise loss or theft utilises an Advanced RISC Machine (ARM) CPU. Real-time user authentication is accomplished by the application of facial detection and the PCA method (driver, who starts the engine). The ARM processor takes action depending on a comparison result (authentic or not). A GSM/GPRS modem is used to notify the vehicle owner through Multimedia Message Service (MMS) of the illegal access, and ARM creates a signal disabling the car access (i.e. an interrupt signal to the car engine to cease his action). Short Message Services (SMS) may also be extended to the vehicle's current position utilising the GPS modem (SMS). Preventing theft and loss is the goal of this system, which uses an ARM-based Advanced RISC Machine (ARM) CPU (Reduced Instruction Set Computing refers). For the Face detection subsystem (FDS) in this technique, face identification is its primary objective (who try to access the Auto). With the use of the PCA method, a person's own common values are used to compare their photo to the nearest numerical value. Owners get MMS messages with GPS coordinates of the vehicle's position if the person's identification matches that of the vehicle's current owner.

**Das et al. [7]**presented a technique for tracking and tracking down the locations of car accidents. Using the driver's blink rate as an indicator of fatigue, road hazards, and intoxicated driving, this system is designed to help drivers avoid collisions and other mishaps. We've located the mishap and the vehicle's location. This approach delivers primary care as soon as the accident information is available.

**Anusha et al. [8]**database storage was included into a system using LPC2148. GPS and GSM modules are used in this project. Alcohol consumption and engine temperature are both tracked by this framework. The web page displays these information. Passengers are protected as a result.

**Imteaj et al [9]**built an Android-based software that sends an alarm message to the local police station and medical facility in the event of an unintentional occurrence the outward force of the vehicle's body is extracted using an external pressure sensor in this application. Consequently, the app is valuable in post-accident services and may reduce the severity of an accident.

**Mayuresh et al. [10]**an open source platform is used to track a vehicle's position and analyse its fuel usage and engine performance, as well. Communications are made via GPS/GPRS/GSM modules and temperature and vehicle speed. Each and every one of these values is saved in a database on the server.

**Prashant et al [11]**a system based on the Raspberry Pi and an Android app for smartphones has been developed and installed. GPS/GPRS/GSM SIM 900A is the primary component of the system. Within the truck, the complete setup is confined. An alarm message is sent to the vehicle's mobile phone owner through GSM, while data is transmitted via GPRSS (GPRS Relay Service).

**Manali et al [12]**it was recommended that an Android smartphone be used to connect to the 3G/4G dongle used as a modem in a Raspberry Pi-based architecture. In order to display the car's location on a map, the vehicle unit is linked to the vehicle and receives signals from a mobile tower. In addition to GPS and GSM modules, the connected device also includes a CPU that is mounted in the car. GPRS is used to constantly monitor the vehicle's location in the web server while it is driving.

**Navod et al [13]** designed and implemented a system to track and monitor a vehicle, as well as provide vehicle status information. A smartphone acts as a remote control for several aspects of the car, including the doors, parking lights, and side mirrors.

**Vishal Pande et.al [14]** An embedded system platform may be used to construct a controller to regulate the vehicle's speed and display to monitor the zones, according to a framework for autonomous speed management of over-speeding cars.

**Monika Jain [15]** developed and demonstrated a gadget that can identify reckless driving and send an alarm to the appropriate authorities in the event of a traffic infringement. Early detection and alarm systems for cars are the goals of this frame of reference for system design. Each location's police officer sets the speed limit based on traffic conditions. Overspeed violation management is made easier by this gadget, which records, displays, and enters data into a database.

**Ni Hlaing et.al [16]** Developed a system that monitors the vehicle's speed on public roads, highways, and other locations where drivers frequently exceed the speed limit. The information is delivered to the PC (Personal Computer) which activates the camera that captures the vehicle of excess speed when the speed is exceeded.

**Amarnarayan et.al [17]** a critical issue that has received a lot of attention recently is the development of an accurate and robust speed estimating system that can assist vehicles avoid becoming stuck in traffic jams.

**Nehal Kassem et.al [18]** This technology can detect and estimate the speed of a car in a regular roadway with an accuracy of 90 percent, while also being able to accurately identify vehicle motion.

**Rajesh Kannan Megalingam et.al [19]** Developed a wireless sensor network that conducts efficient traffic routing but also tracks over speeding cars, i.e., smart traffic controller. MicroZ (MRP2400, 2.4 GHz IEEE 802.15.4), TWMS (Tiny Wireless Measurement System) from Crossbow are used for this task. A gateway and DAC are needed to gather, send, and receive data (Data Acquisition Card). This device includes a microprocessor that generates interrupts and a speedometer simulator to detect over-speed.

**Muhammad Tahir Qadri et.al [20]** At the entry, a system that automatically detects and recognises a vehicle's licence plate has been created and installed for use in highly restricted areas such as military zones or the vicinity of important government buildings like Parliament and the Supreme Court, among others. The car is detected by the system, which then takes a picture of the vehicle. Using image segmentation, a vehicle's licence plate may be retrieved from an image.

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## Conclusion

We All know very well that transportation of petroleum products like petrol, diesel and natural gases from one place to other place is very difficult task. There are so many things we must have to consider and must be aware about this like speed of transport vehicle, temperature inside the tank, monitoring of fuel.

In this paper we gives all researchers solution through mechatronics and wireless communication. This all solution is very important and necessary parts for protecting this highly flammable product. Because one simple mistake or hazard is through us in a danger situation.

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