

# VEHICLE MONITORING SYSTEM

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**Abstract** - Monitoring of the vehicle is our primary concern. This project describes a design of effective information system that can monitor an automotive / vehicle / fuel level in traveling. This project is designed to inform about the location of vehicle and the fuel level in the vehicle to the owner through a message. This project uses a number of conductivity sensors attached to a thin rod for a certain distance level. This detects the level of the fuel and sends the signal to the microcontroller. Vehicle monitoring system is done using GPS and GSM modems. Messages notifications are sent to the mobile number which is prescribed. This monitoring system is composed of GPS receiver and a GSM modem. GPS receiver gets the geo satellite information satellites in the form of latitude and longitude. The microcontroller processes this information and this information is sent to the user/owner using GSM modem. The fuel level in the fuel tank is also sent as an information to the certain mobile number for a particular period of time.

**Key Words:** GPS, GSM, Microcontroller, Sensors.

## 1. INTRODUCTION

A Vehicle tracking system combines the use of automatic vehicle location in individual vehicles with software collects the fuel level of the vehicle and the location of the vehicle. Modern vehicle tracking systems commonly use GPS or GLONASS technology for locating the vehicle, but other types of automatic vehicle location technology can also be used. Vehicle information can be viewed on electronic maps via the Internet or specialized software. Urban public transit authorities are an increasingly common user of vehicle tracking systems, particularly in large cities. The system transmits the live location and fuel level of the Commercial vehicles. The system is programmed in the way that tracks the vehicle continuously. A message will be sent to the owner regarding the information about the fuel level and location of the vehicle.

Our "VEHICLE MONITORING SYSTEM" is an aspect which implements the monitoring and tracking of Commercial vehicle. In our project the vehicle is monitored by GSM and GPS system and sensors connected to a microcontroller. The controller transfers the information of the location and fuel level to the owner in the form of message. The fuel level monitoring and location is being transmitted to the microcontroller continuously.

## 2. METHODOLOGY

A new and improved design for the vehicle monitoring system was developed based on the literature review and the problem identification. The required parameters for the design purpose is analyzed. The components required for the fabrication are selected. The proposed design consists of GPS modem and GSM modem. The GSM module and the GPS tracking unit and fuel monitoring unit is connected to the microcontroller. The microcontroller is programmed using MPLAB and embedded C. The sensors are fitted to the thin rod and connected to the microcontroller. The total level of the fuel tank is measured and separated into a number of level. The sensors will be fixed with particular level of distance in which the different level of the tank will be programmed.

## 3. COMPONENTS USED

SL.NO.	COMPONENTS
1	Microcontroller
2	LCD Display
3	GSM Module
4	GPS Module
5	Fuel level monitoring

## MICROCONTROLLER

The Microcontroller is used to control the products or devices and also collects the information from the sensors and GPS, GSM modem. The information is sent to the particular mobile number through the microcontroller. It also displays the information through a LCD display.

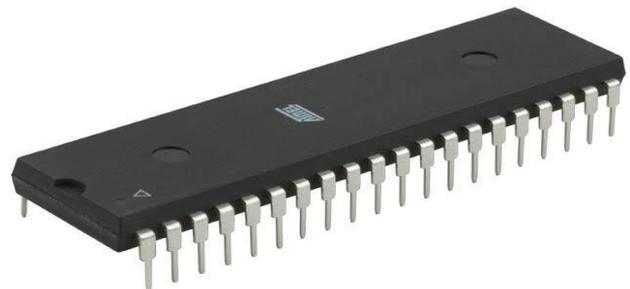


Fig-3.1 Microcontroller

### LCD DISPLAY

The LCD display is used to display the information from the microcontroller. It displays the level of the fuel in the fuel tank of the vehicle and also shows the latitude and longitude information of the vehicle.

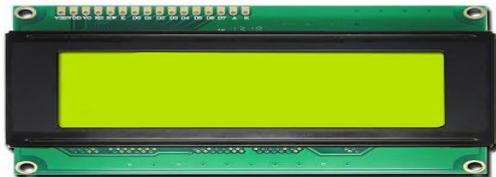


Fig-3.2 LCD display



Fig-3.3 LCD display and Microcontroller on circuit

### GSM (GLOBAL SYSTEM FOR MOBILE COMMUNICATION)

GSM module resembles a device as like mobile phones but few features are not available for GSM module. The frequency band of the GSM generally varies over 900MHz or 1800MHz. It also has LEDs where it can glow up to giving the power supply of 12v to the GSM sensor. The

information about the Fuel level and the location are sent to the mobile number through GSM. Green sensor which indicates the network signal it glows for every 3 seconds. The main purpose of GSM is for communication.



Fig-3.4 GSM Module

### GPS (GLOBAL POSITIONING SYSTEM)

GPS is a navigation system which provides the location and timing services. Main advantage of GPS is to track the location of the vehicle which has these GPS device. It operates based on four or more satellites to get the location. In the project these are used for tracking the location of the vehicle. The latitude and longitude values of the vehicle will be displayed in the LCD display and the information is also sent to the mobile number.

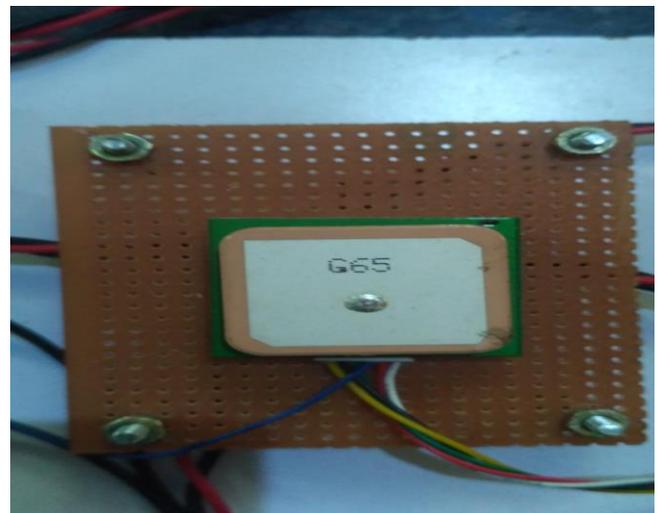


Fig-3.5 GPS Module

### FUEL LEVEL MONITORING

The system is used to identify the level of the fuel in the fuel tank. The conductivity sensors are fitted with a thin rod with a certain distance from each sensors. The sensors detects the level of the fuel in the fuel tank and sends the information to the microcontroller. The level of the fuel is displayed on the LCD display and also sent to the mobile number through the GSM module.

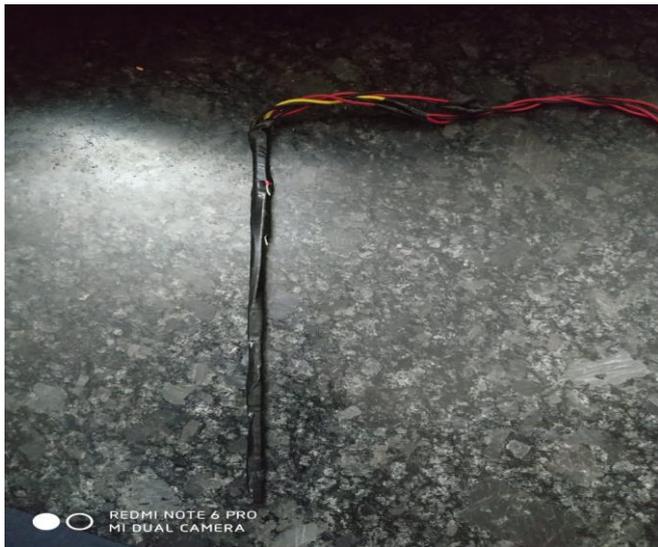


Fig-3.6 Thin rod with Sensors

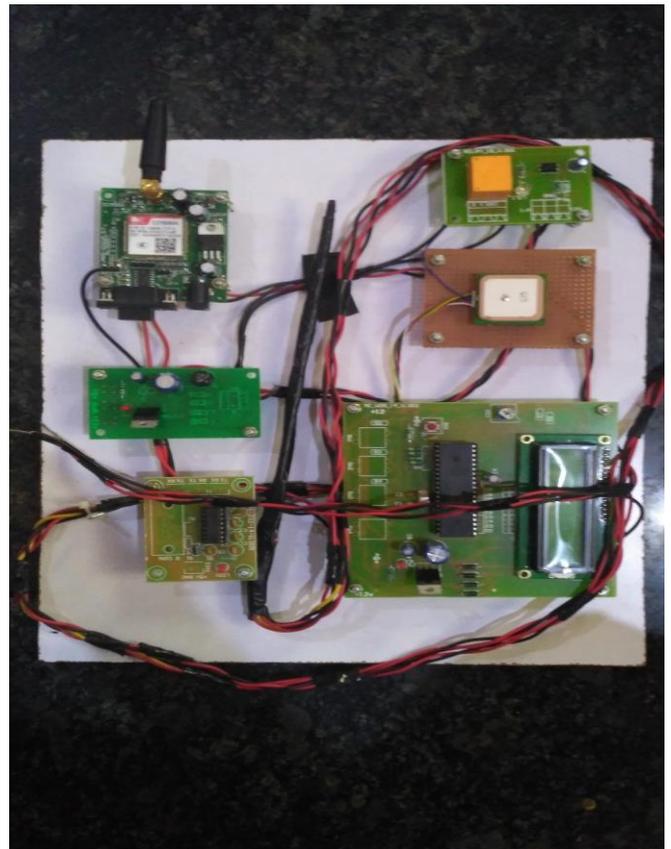
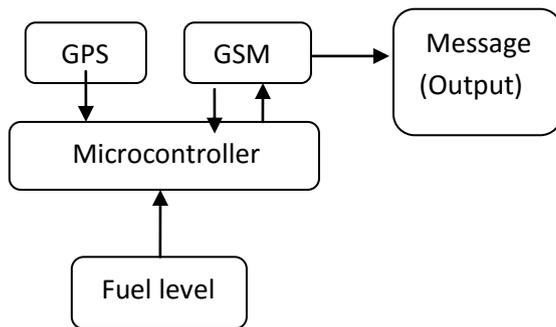


Fig-5.1 Working model

#### 4. BLOCK DIAGRAM



#### 5. WORKING

The system is operated by a power supply from a battery. When the system gets operated, the GSM gets initialized. The sensors fitted with a thin rod is inserted into the fuel tank. The sensors tracks the level of the fuel for a particular interval of time and notifies it. This information is sent to the microcontroller and it sends the level of the fuel to the owner as a message. The location of the vehicle is tracked by sending a message (#TRACK) to the mobile number in the GSM modem. The antenna in the GSM modem receives the signal and the mobile number receives the message, the GPS system starts tracking the location of the vehicle and results in a form of latitude and longitude. This information is sent to the microcontroller and the location of the vehicle will be sent automatically to the certain mobile number. There is also a LCD display is attached to the microcontroller unit to indicate the fuel level and latitude and longitude values in the display for project purpose.

#### CONCLUSION

The vehicle monitoring system provides a proper notification system about the fuel level in the fuel tank and also tracking location. The driver can make a false statement about the fuel level to the owner and can gain extra money. This scenario can be changed by the notification system. The system helps the owner to have the knowledge of fuel level in vehicle and the location of the vehicle at regular interval of time. It helps to know the honesty of the driver to the owner and also can save the money. This project vehicle monitoring system represents the notification to the mobile numbers. The proposed vehicle monitoring system can track the fuel level in the vehicle and also the geographical information of the vehicle and sends the notification to the owner. This made the project more user-friendly and reliable. The proposed method can be highly beneficial for the automotive industry.

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