# Smart Fuel Distribution System with Mixing Avoidance

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**Abstract— Most of the petroleum industries distribute the fuel using tanker, theft is happening on parking and sometimes driving insecurity places. The safe of vehicles is extremely essential for government sector. Vehicle tracking system installed in the vehicle, to track the place of tanker. To overcome all these limitation we used RFID technology for security purpose & to track the tanker use GPS technology.**

Index Terms— Fuel-level sensor, Status message, Control message, Fuel distribution system.

## I.  INTRODUCTION

Nowadays there are various electronic technologies available in the market composed with embedded systems and wireless technology for controlling purposes. The embedded system technology is one of the highest growth areas because these systems are used in each and every market segments now a days like electronics, automation, biomedical, wireless communication, Using wireless and embedded systems we can provide security for our grids, in this paper we discuss about the new concept "Petroleum distribution monitoring system", it is a smart tank monitor system based on wireless communication using embedded technology. These smart tank monitoring systems provide accurate determination of fuel level readings for the users, facilitates security. This project is mainly divided in to two major sections one is transmitter and receiver section with central monitoring system and the other is the wireless embedded security system. The transmitter section consists of fuel well shutdown alarm responsible for the transfer of wireless data to the receiver section, the preventive measures is taken by oil well shutdown alarm, power failure alarm gives us the information regarding the mall functions of the power, and to protect our tankers from others we use theft fuel alarm, In order ensure safe operation we use night patrol alarm.

## II.  OUTCOMES

The advancement of the project to large scale can help financially to the industry indirectly. The main purpose of our project satisfies all the needs related to secure distribution of the industrial products. New technology addresses these requirements, providing the foundation to allow cooperative interaction to be developed.
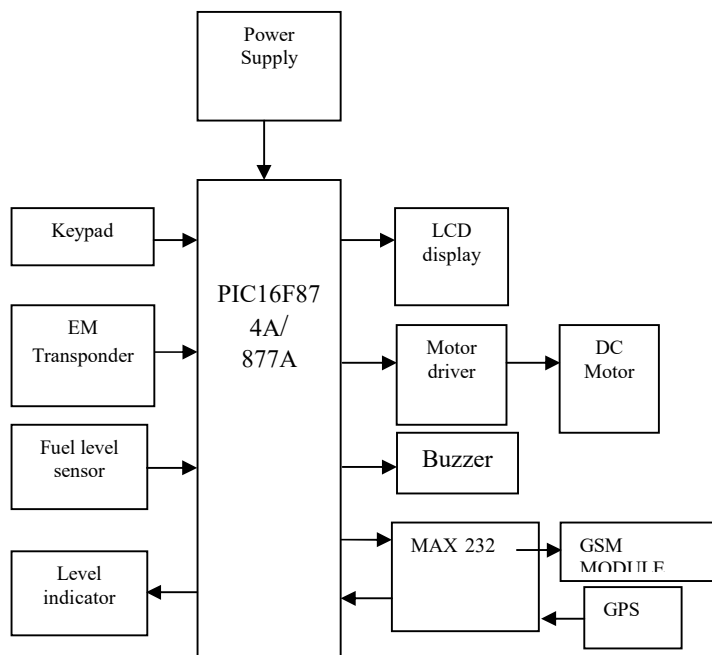
## III.  BLOCK DIAGRAM



Fig.1 Block diagram of tanker station.

## IV.  BLOCK DIAGRAM DESCRIPTION

Our system may be the first approach towards security of petroleum products distribution such as petrol, diesel, and kerosene etc. PIC16F874A/877with real time emulation is used to trace embedded support. GSM modem is used for sending and receiving message from tanker station. RS232 is a serial communication protocol which is used for interface between PIC16F874A/ 877A and other units.  Motor is an output device; its speed will be varied according to the speed set by the switches. The speed can be varied by varying the voltage given to the PWM converter (using keypad). The speed of DC motor is directly proportional to armature voltage and inversely proportional to flux. By maintaining the flux constant, the speed can be varied by varying the armature voltage.

 When DC motor is turned off, initialize the LCD and the message will be displayed on the LCD display. After receiving password from tanker section the sentence "press YES is displayed on the LCD. If password is incorrect then message will not be displayed on the LCD. To drive the motor on tanker station it is essential to "press YES" correctly on main station. If YES is not correctly pressed then DC motor

remains off. If user is not authorized then buzzer rings and automatically error message is send to the main station. If user is authorized then buzzer remains in off state and DC motor drives and level indicator indicates the amount of fuel level in tanker section.

### A. PIC CONTROLLER:

The signals from the EM reader, GPS, fuel level are given to the pic-controller. controller processes all these signals and gives data to LCD display and computer which are connected parallel to each other.

### B. LCD DISPLAY

Liquid Crystal Display which is commonly known as LCD is an Alphanumeric Display it means that it can display Alphabets, Numbers as well as special symbols thus LCD is a user friendly Display device which can be used for displaying various messages unlike seven segment display which can display only numbers and some of the alphabets. The only disadvantage of LCD over seven segment is that seven segment is robust display and be visualized from a longer distance as compared to LCD. Here we have used 16 x 2 Alphanumeric Display which means on this display we can display two lines with maximum of 16 characters in one line.
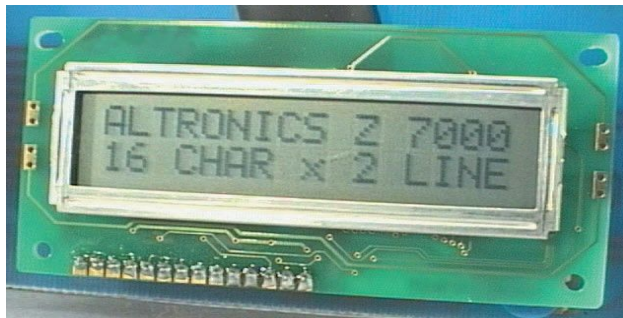


Fig.2 LCD Display

### C. EM READER

When EM transponders come in the range of EM reader it will read the unique id number.

### D. EM TRASPONDER

EM transponders are used for unique identification.

### E. BUZZER

Buzzer is used to give an alarm to the driver if the pressure inside the tire reduces below a set value which is indicated by the pressure sensor BJT is used for this purpose along with the buzzer.

### F. MAX232

MAX232 IC is used for serial communication.MAX232 is compatible with RS-232 standard, and consists of dual transceiver. Each receiver converts TIA/EIA-232-E C levels into 5V TTL/CMOS levels. Each driver converts TTL/COMS levels into TIA/EIA-232-E levels.

### G. MOTOR DRIVER IC

This circuit is used to drive dc motor.

### H. MOTORS

Motor is an output device; its speed will be varied according to the speed set by the switches. The speed can be varied by varying the voltage given to the PWM converter (using keypad). The speed of DC motor is directly proportional to armature voltage and inversely proportional to flux. By maintaining the flux constant, the speed can be varied by varying the armature voltage.

### I .NAVIGATION SYSTEM

The space-based navigation system that provides location and time information in all weather conditions, anywhere on or near the earth where there is an unobstructed line of sight to four or more satellites. It is used to navigate the oil tanker.

### K. BATTERY

Batteries store energy being produced by given generating source and when this source is unavailable this energy can be used by loads. The inclusion of storage in any energy generating system will increase the availability of the energy.

### CONCLUSION

Our project is one idea which can change the face of today's manual system of distribution of fuel and data keeping. The total access of all these activities provides the correct approach towards security and economic needs of the industry itself can control distribution. In short, this project probably can be implemented for the use of other tasks other than petrol distribution, on large scale to achieve various goals of industries. Hence the overall idea of our project provides access only to the authorized user and also it facilitates the country to be corruption free.

Throughout this system, many useful records can be drawn such as the amount of litres being supplied in a particular fuel station, the main customers that dispense the fuel. By referring to the collected statistical reports, the performance of the system can be improved by adapting the required updates.

### FUTURE SCOPE

Our vision is to make India free of corruption, this thought motivated us. The size and cost of the device will be low as possible and every person of India can afford our device easily. The capability of our sensor will be increased and with low power we will utilize maximum output.

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