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Enhanced Protection for Multi-axle Vehicles

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Abstract:**The world is flourishing with new innovation in the field of science and technologies. We are very proud of this technical growth. It's become true, but sometimes these technologies are misused for destructions. The transportation plays a major role in our country. Heavy vehicle owners and drivers in our country face a lot of problems in day to day life. They impose a huge socio-economic cost in terms of untimely deaths, injuries and loss of economic growth. The main aim of my work is to provide a cost effective solution, to become entrepreneur in transports and logistics also provide a multilevel safety technology in safeguarding the lives. It helps to improve the economy of our circumstances and government.**

Keywords-cost effective solution, multilevel safety technology, entrepreneur in transport and logistics, improve the economy of our government and circumstance.

I. INTRODUCTION

We can see the overloaded trucks on Indian road. Our Indian government passed an act for overloading and subsequent amendments to implement strictly "The Motor Vehicle Act, 1988". But overloaded trucks drag their weights on the roads against the law and bearing safety of the citizens as serious consequences. In India around 33,000 citizensexpire due to overloading and especially in Tamilnadu around 4,000 citizenspass away due to this issue. The robbers are stolen the valuable goods during running time of the truck using hook, and many complaints are filed in police station. The recent survey says that around 20% of goods are stolen it which affects the economic growth of our country. This is precisely found in the areas like Namakkal, Salem etc., in Tamilnadu. Besides thegoods, occasionally trucks are also stolen.

Owing to rapid growth in fuel prices especially in developing countries, the common man gets affected. So people started to embezzle fuels. Recent survey says that the stolen fuel is disseminated to other person with the scramble of 15% disburse.

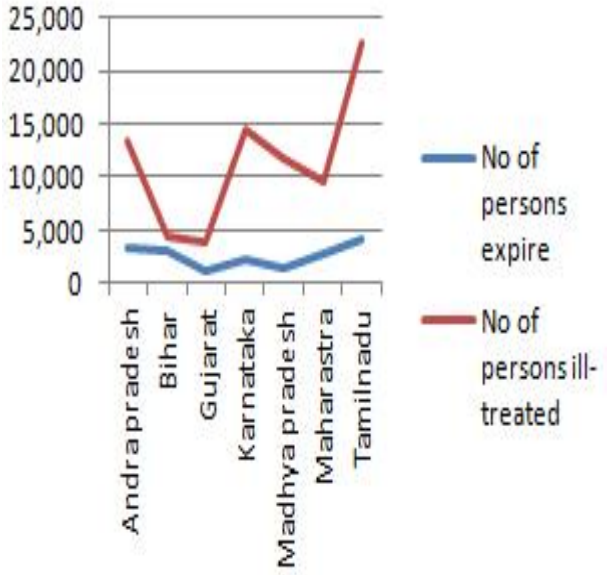

Fig.1 Accidents caused due to overloading in the year 2011

Due to drunk and drive, in India each year around 3,400 citizens were ill-treated and 9,900 were expire and especially in Tamilnadu 3,475 citizens were ill-treated and 575 citizens were expire. Indian government had passed an act for drunk and drive "The Motor Vehicle Act, 1988". In that act to consolidate and amend the law relating to drunk and drive person punishable for first offence six months imprisonment, for second offence committed to three years with three thousand fine.

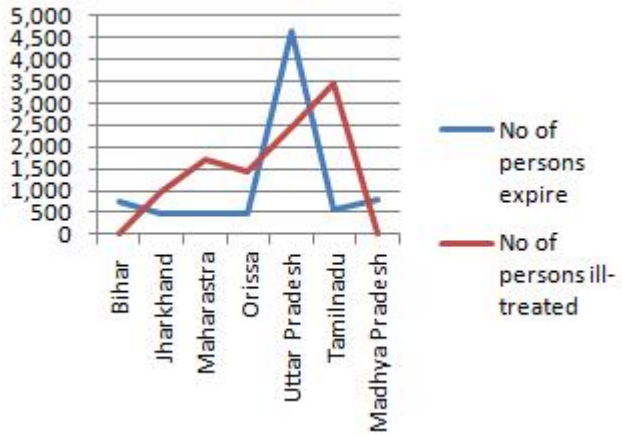

Fig.2 Accidents caused due to intake of alcohol in the year 2011

II. OBJECTIVES

To overcome the hurdles in owing and driving heavy vehicles in domestic, industrial and military applications by implementing the following ideas

- To know the heavy vehicle load and if exceeds the maximum permitted load intimate to the concerned authorities.
- To avoid goods larcener and incase of any such theft happened intimate to the concerned authorities by using GSM and GPS.
- Location of the heavy vehicle can be viewed by the owner using GPS.
- To avoid fuel theft, fuel level will be automatically sent to the owner by using GSM and GPS besides these if the load is reduced in running position of the truck intimate to the vehicle owner.

III. EXISTING SYSTEM

- To obtain the reliable information about currentvolume in heavy vehicle tank.
- To detect the fuel theft from the tank.
- To carry out the fuel tank monitoring in remote areas
- To determine the fuel consumption.
- To show the heavy vehicle location on the map.

IV. LIMITATIONS OF EXISTING SYSTEM

The existing system provides facilities to track the vehicle monitor the fuel consumption and detect fuel theft. But major issue is that the goods on the truck are least bothered. This leads to the theft of valuable goods during transportation which are not even know to the drivers and owners. Another important limitation is that the overloaded trucks leading to fatal accidents are not intimated to the concerned authorities.

V. PROPOSED SYSTEM

In proposed system, we have added special features such that the same system will have multipurpose benefits of indicating goods and fuel theft besides the cost indication, overloaded vehicle alarm, sensing drunk and drive. I can proudly say that all these vital features are installed in a single system which is moreeffective and efficient valuable but less costly when compared to the price of the existing systems with limited facilities.

VI. BLOCK DIAGRAM

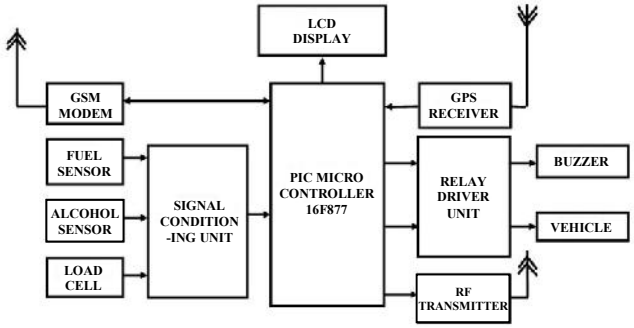

Fig. 3 Block diagram of Transmitter section

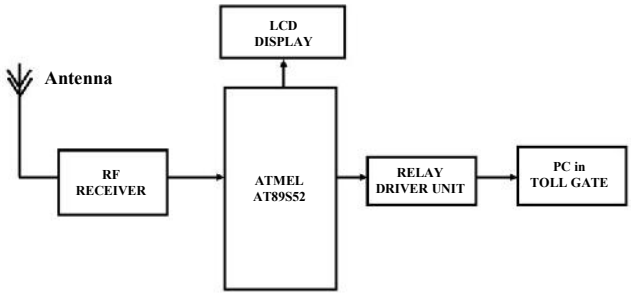

Fig. 4 Block diagram of Receiver section

VII. BLOCK DIAGRAM DESCRIPTION

The paper aims at preventing the drunk and drive, overload of goods, theft of fuel and goods which reduces the hazards in the owing and driving a heavy vehicle. Hence shown in the above block diagram, the vehicle is fitted with alcohol detector sensor-MQ3, RF transmitter and receiver loadcell–CZL601, fuel level sensor float type, GSM-SIM300 and GPS-634R which are in turn connected to the PIC Microcontroller 16F877 through signal conditioning unit i.e. instrumentation amplifier.

The alcohol detector sensor-MQ3 is fitted in steering of the truck. If the driver is drunk senses and it send a signal

to the PIC microcontroller-16F877 which is programmed to automatically extinguish the ignition through relay driver unit such that the engine stopped immediately.

The lorry truck comprises of a load cell which has a threshold weight. The net weight of the goods to be carried is set in the assembly through the PIC microcontroller -16F877. In case of theft during the halt or transportation, the net weight of the goods decreases the set threshold value. ThePIC microcontroller -16F877 is programmed in such a way that an alarm will be indicated to the relay driver.

The fuel level sensor float type in the fuel tank will display the fuel level which can help in detecting any fuel theft and any discrepancies will be indicated to concerned authorities.

Another important application is to detect the overload in the vehicles. This can be implemented by providing a RF transmitter near the wheels of the truck which carries the information's like the lorry registration number, engine number, owners name and address with contact number etc. RF receiver is placed at the tollgate, when the vehicle crosses the tollgate the RF transmitter allows to read all the information in the receipt of the tollgate pass. In case of overload an alarm will be indicated and in addition this is transmitted to the nearest police control room through GPS and GSM. The relay driver unit is directly connected with the PIC microcontroller -16F877. Buzzer is used for indication when any parameter above mentioned varies. LCD is used to display the amount of goods in the vehicle. The GSM modem transmits these details to the stored number of the owner in thePIC microcontroller -16F877.

VIII. CONCLUSION

Thus I conclude that even though lots of technologies are available for small vehicles, there is lack of smart technology for the heavy vehicles. This paper will be an eye opener for the vehicle owners and importantly the government has taken into charge of the mal practices and to eradicate corruption in transport and logistics systems. For vehicle owner to be sure their goods and vehicles are under safe condition. Hence this paper will definitely be a milestone in improving the economy of the state and government of our country

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