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Drunken Driving Prevention System

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ABSTRACT: The purpose of this project is to develop vehicle accident prevention mechanism by method of alcohol detector in an effort to reduce traffic accident cases based on driving under the influence of alcohol. This project is developed by integrating the alcohol sensor with the microcontroller. The alcohol sensor used in this project is MQ-5 which detects the presence of alcohol content in human breath. An ignition system with spark plugs is build up as a prototype to act like the ignition starter over the vehicle's engine. The ignition system will operate based on the level of Blood Alcohol Content (BAC) in human breath detected by the alcohol sensor.

The majority of accidents which occur are due to drunken driving case. The current technology in India to check alcohol content in blood of driver involves the usage of breath alcohol analyzers or Alco sensor which detects alcohol content exceeding **30 mg per 100 ml. of blood in any person** (i.e. The legal limit of blood alcohol content (BAC) or blood alcohol concentration is 0.03% or 30mg per 100ml of blood), or being under the influence of a drug to such an extent as to be incapable of exercising proper control over the vehicle. The **Breath Alcohol Testing Devices** provide one such non-invasive technique of estimating the Blood Alcohol Content (BAC) with great accuracy.

KEYWORDS: Alco sensor, GSM (GLOBAL SYSTEM MONITORING), GPS (GLOBAL POSITIONING SYSTEM).

I. INTRODUCTION

A breathalyzer or breath alcohol analyzer is a device for estimating blood **alcohol** content (BAC) from a **breath** sample. Breathalyzer is the brand name (a genericized trademark) for the instrument that tests the **alcohol level** developed by inventor **Robert Frank Borkenstein**. Motorists can be stopped and required to take a breath test by police at the scene of a road traffic accident, if a police officer suspects that a motorist may be driving under the influence of alcohol, or if a motorist commits a moving traffic offence. Now a day's road accident is a major problem all over the world. The recent report says that annual average of 7,00,000 road accidents, 10 percentage occur in India which has overtaking China.

The latest annual statistics revealed by the World Health Organization (WHO) in its first Global status report on road safety, 80,000 people are killed on Indian roads due to speeding, drunk driving, less usage of helmets, seat belts and child restraints in vehicles. Another latest report of National Crime Records Bureau or NCRB says that 40 people under the age of 25 die in road accidents all around the world. It states that the drunk driving is a major factor for the rise of death on roads. The drunken driving fatalities in the year 2012, till the 27th November was 11,769. The numbers for 2010 and 2011 were 12,998 and 11,773 respectively. It shows that the problem of drunken driving is far from over. In the 2012 DUI national statistics released by the NHTSA (National Highway Traffic Safety Administration) 11,773 people died in alcohol-related crashes. Most of the accidents occurring outside the cities are due to drunk driving and no testing methodology has yet been adopted to avoid these fatalities on highways.

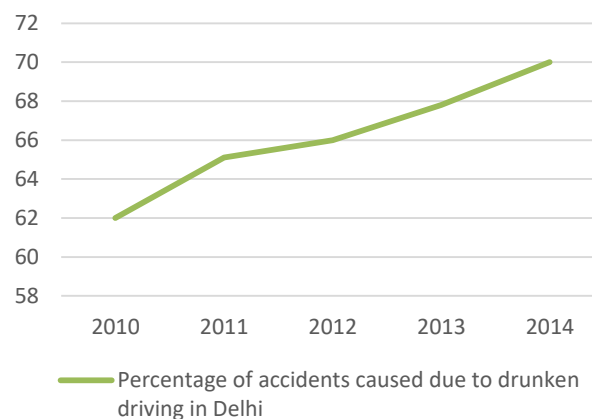
Initially let us look over the Indian statistics regarding drunk driving.

- 1) Every year the drunken driving prosecutions increase as seen from Fig.1.
- 2) With India reporting as many as 1.34 lakh fatalities in road accidents every year, a vast 70 per cent of them being due to drunken driving as seen in Fig.2.

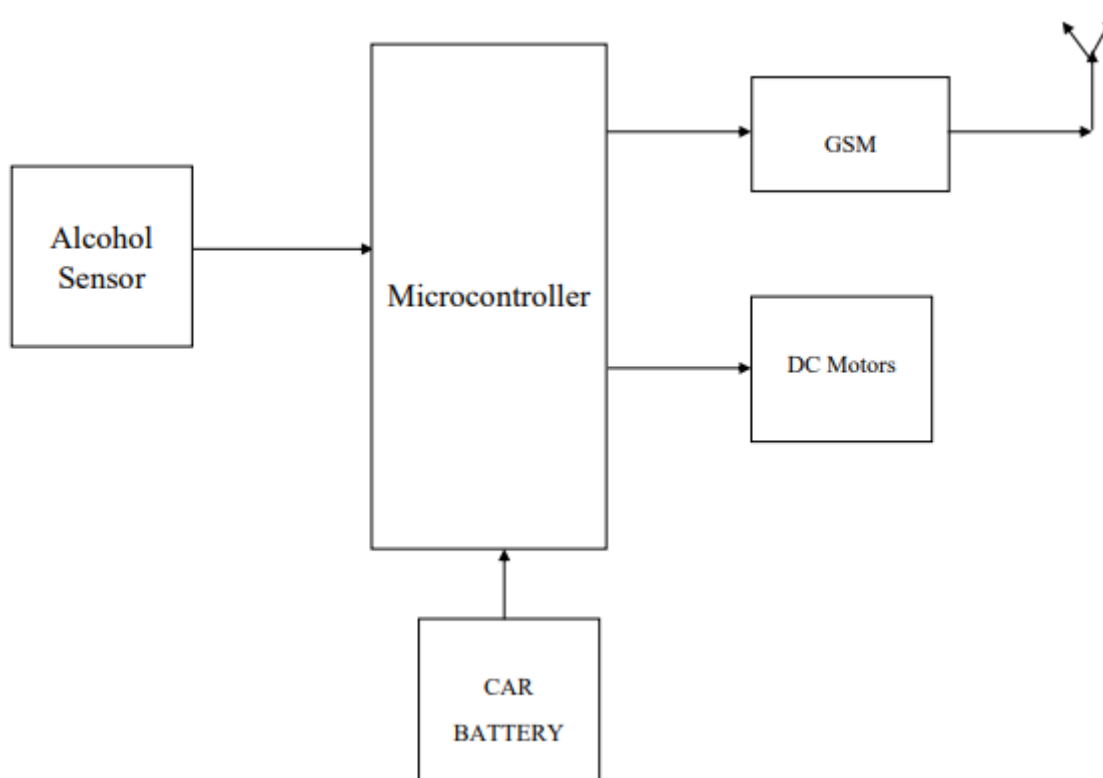
Fig.1 - No. of drunk driving prosecutions



Fig.2 - Percentage of accidents caused due to drunken driving in Delhi



BODY OF THE REPORT:



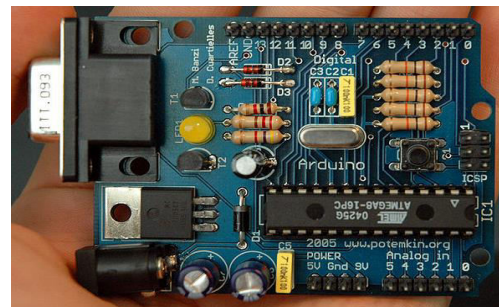
The above figure shows the block diagram of the controller based drunker sensing vehicle. The block consists of switches and sensor, controller, relays and motors. The required actions of vehicle are first programmed and then stored in controller. So we can get signal from controller only. Start Button is used to start the operation of the vehicle. We can press the start button and then vehicle action can perform. Controller reads the input signals and it can produce the output according to the assembly language program stored in it. The output signals to drive the DC motor is used to forward & reverse direction. If any alcohol content is sensed, the controller stops the DC motor using relay driver and message will be sent to concerned person through GSM. In this way sensor can sense the drunk driver in vehicle using controller.



1. ALCOHOLICSENSOR (MQ3 Gas Sensor):

This is an alcohol sensor named MQ-3, which detects ethanol in the air. It is one of the straightforward gas sensors so it works almost the same way with other gas sensors. Typically, it is used as part of the breathalyzers or breath testers for the detection of ethanol in the human breath.

2. Microcontroller:



Microcontroller is a single integrated circuit which is dedicated to perform one task and execute one specific application. It contains memory, programmable input or output peripherals as well a processor. It receives the input from Alco sensor and generates corresponding output signal.

3. **GSM (Global System for Mobile Communications, originally *GroupeSpécial Mobile*):** It is a standard set developed by the European Telecommunications Standards Institute (ETSI) to describe protocols for second generation (2G) digital cellular networks used by mobile phones. The GSM standard was developed as a replacement for first generation (1G) 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 communications, first by circuit switched transport, then packet data transport via GPRS (General Packet Radio Services) and EDGE (Enhanced Data rates for GSM Evolution or EGPRS).

II. CONCLUSION

Therefore it is impossible for drunk people to drive vehicles without being traced immediately by sensing the alcohol content in their breath exhale, hence eliminating police examining drunken driver.

III. SCOPE FOR FUTURE WORK

- This project is intended for 4 wheel automobiles and heavy vehicles like trucks, buses & Lorries etc.
- We can also use infrared breath analyzer instead of alcohol sensor located either on the steering wheel or the driver's side door that is capable of detecting alcohol in the air particles around it. This means that even if the driver doesn't have the foresight to blow into the device, or doesn't want to, the system will still be able to determine how many drinks he or she has imbibed.



- Touch sensor mounted either on an ignition button or a gear shift that employs near-infrared tissue spectroscopy to determine the driver's blood alcohol content.

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 - e. Working of breath analyzers
 - f. Tests used to determine if driver is driving drunk



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