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Automatic Engine Locker for Drunken Drivers

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Abstract—Every day, 60-80% of road accidents occur across the country. The statistics show that there are more than 10 motor vehicles related deaths per day, many which are preventable. Road accidents due to motor vehicles occur for a variety of reasons. The major reason for road accident is discussed. Drunken driving is the major cause for the road accidents. Drivers drive the vehicle under the influence of alcohol and causes damage to property and life. We proposed a system which would constantly monitor the drivers. It detects the presence of alcohol. If this system detects the presence of alcohol, it controls the engine. This system can be installed in all kind of vehicles and also ensures the safety of drivers as well as passengers.

Keywords --Comparators, motor drive, relay, buzzer, motor, MQ3 alcohol sensor.

I. INTRODUCTION

We usually come across many road accidents that occurs due to drunken drivers. Some drivers drive vehicle under the influence of alcohol and they cause damages to property and life. Drunken drivers are in an unstable condition and so, rash decisions are made on the highway which endangers the lives of road users, the driver inclusive. The system implemented by us aims at reducing the road accident in the near future due to drunken and drive. So, here we propose an innovative idea to eliminate these kinds of cases. The purpose of this project is to develop vehicle accidents prevention by method of alcohol detection The system detects the presence of alcohol in the vehicle and immediately locks the engine of the vehicle. It ensures the safety of drivers as well as passengers.

EXISTING METHODOLOGY

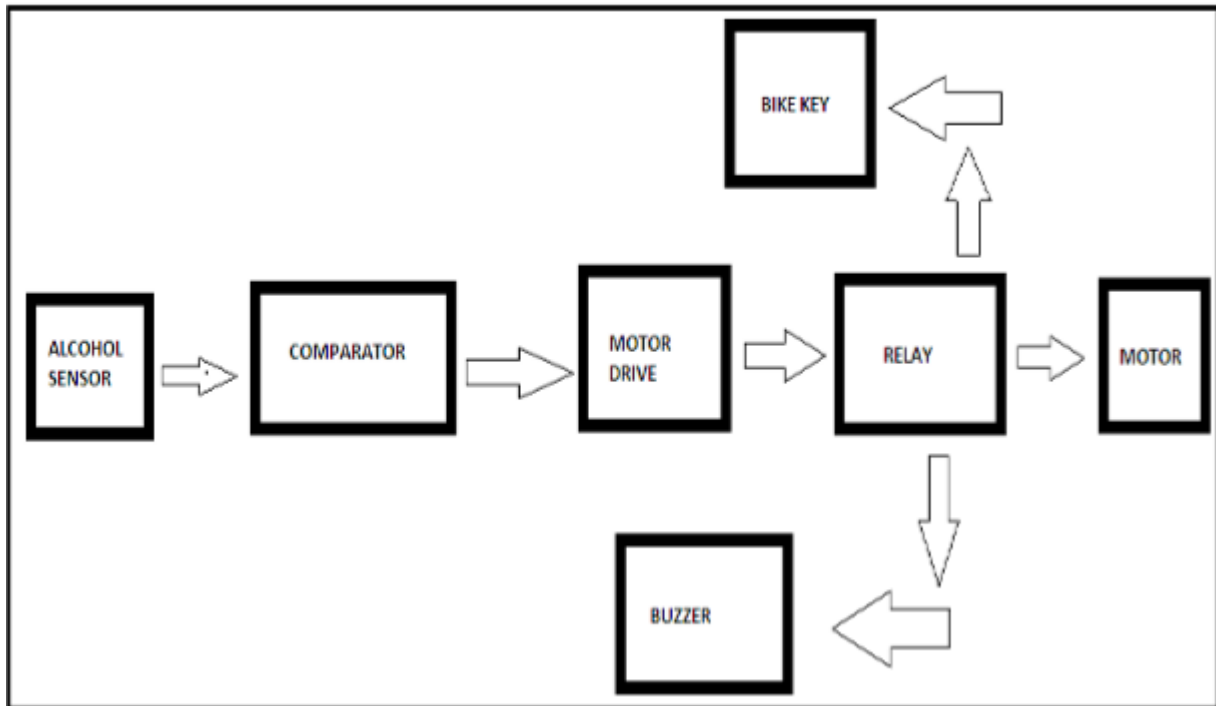
The existing methodology is an external system. The driver blows the device it finds the if the driver drunken or not. The breathalyzer was the first equipment used by cops to detect alcohol during the patrol checking. But this method needed time and space and more. Manual power for alcohol free driving of civilians. The main reason for driving drunk is that the police are not able to check each and every car and even if they catch any one the police can be easily bribed. So there is a need for an effective system to check drunken drivers. For this we have an idea to compensate this trouble.

PROPOSED METHODOLOGY

We proposed an innovative idea to create an effective alcohol detection system in vehicle. It is an internal system to be connected to the vehicle ignition. The alcohol sensor is used to check whether

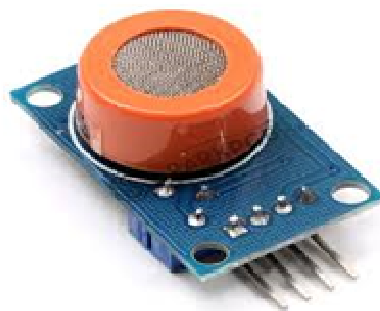
the driver is drunken or not. If the driver is drunken the engine of the vehicle will be automatically locked.

BLOCK DIAGRAM



COMPONENTS

ALCOHOL SENSOR: The analog gas sensor- MQ3 is suitable for alcohol detecting, this sensor can be used in a breath analyzer. It has a high sensitivity to alcohol and small sensitivity to benzene. The sensitivity can be adjusted by the potentiometer sensitive material of MQ3 gas sensor is SnO₂, which with lower conductivity in clean air. When the target alcohol gas exists, the sensors conductivity is higher along with the gas concentration rising, use of simple electro circuit, convert change of conductivity to correspond output signal of gas concentration. Figure 3. Alcohol Sensor MQ-3 gas sensor has high sensitivity to Alcohol, and has good resistance to disturb of gasoline, smoke and vapor. It has fine sensitivity range around 2 meters. The sensor could be used to detect alcohol with different concentration; it is with low cost and suitable



Sensitivity Adjustment: Resistance value of MQ-3 is difference to various kinds and various concentration gases. So, when using these components, sensitivity adjustment is very necessary. It is recommended to calibrate the detector for 0.4mg/L (approximately 200ppm) of Alcohol concentration in air and use value of Load resistance that (RL) about 200 K Ω (100K Ω to 470 K Ω). When accurately measuring, proper alarm point for the gas detector has to be determined after considering the temperature and humidity influence. Character configuration: 1. Good sensitivity to alcohol gas. 2. Circuit is simply driven. 3. Low cost and long life. 4. Small towards benzene and High sensitivity to alcohol . 5. Fast response and high sensitivity and stability and long life. Specification: 1. Power supply requires 5 volts. 2. Interference type: analog only. 3. Pin specification: 1-output, 2-GND, 3-VCC 4. High sensitivity and fast response. 5. Stable and long life 6. Small towards benzene and High sensitivity to alcohol Simple drive circuit with size:40*20mm

Features:

- The PS series are high performance buzzers that employ uni-morph piezoelectric elements and are designed for easy incorporation into various circuits.
- They feature extremely low power consumption in comparison to electromagnetic units.
- Because these buzzers are designed for external excitation, the same part can serve as
- both a musical tone oscillator and a buzzer.
- They can be use with automated inserters; moisture resistant models are also available

COMPARATOR:

- The LM324 comparator circuit consists of sensor voltage, reference voltage, Vcc, ground and output pins. The following circuit shows the LM324 IC circuit and here we are explaining about the each pin of LM324 comparator. When the power is applied to the non-inverting terminal which is less than the inverting voltage of the op-amp then the output becomes zero which means there is no current flow. Because we already know that when " $+ > - = 1$ ". Here the '+' sign indicates non-inverting terminal and '-' sign indicates the inverting terminal.
- If the non-inverting voltage is greater than the inverting voltage then the output will be high.
- In this output of LM324 is internally connected to some resistance and it has some arrangement inside the IC, which makes a lot of difference to other comparators.
- It is internally pulled-up, so no need of any resistor connection of the power supply.

RELAY:

A relay is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid-state relays. Relays are used where it is necessary to control a circuit by a separate low-power signal, or where several circuits must be controlled by one signal. The first relays were used in long distance telegraph circuits as amplifiers; they repeated the signal coming in from one circuit and re-transmitted it on another circuit. Relays were used extensively in telephone exchanges and early computers to perform logical operations.

MOTOR:

A **DC motor** is any of a class of rotary electrical machines that converts direct current electrical energy into mechanical energy. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current flow in part of the motor.

BUZZER:

A buzzer or beeper is an audio signalling device,^[1] which may be mechanical, electromechanical or piezoelectric (*piezo* for short). Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

APPLICATION

- Alcohol detector project” can be used in the various vehicles for detecting whether the driver as consumed alcohol or not.
- This project can also be used in various companies or organizations to detect alcohol consumptions of employees.
- Applications of Alcohol Detector in Car:
- Alcohol Detector project” can be used in the various vehicles for detecting whether the driver has consumed alcohol or not.
- Breathing analyzer project can also be used in various companies or organization to detect alcohol consumption of employees.
- Alcohol detection system in an automobile is a must feature which every cab or bus should have.

Future Development

- 1) We can implement GSM technology with alcohol detector. So Alcohol detection & vehicle controlling through text SMS will inform the relatives or owners of the vehicle about the alcohol consumption.
- 2) We can implement GPS technology so that once alcohol detection is done, the system will find out the location of the vehicle.

CONCLUSION

In this project we have developed a real time model that can automatically lock the engine when a drunken driver tries to drive a car or any kind of vehicle by adapting this system in the car. Hence we can safeguard the life of the driver and also the passengers.

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