



Automatic Drunken Drive Prevention in Automobiles

Sona Johnson¹, Srinidhi.K.V¹, Veena.T¹, Unni M R²

U.G. Students, Dept. of Electrical and Electronics Engineering, Nehru College of Engineering and Research Centre,
Thrissur , Kerala, India¹

Professor, Dept. of Electrical and Electronics Engineering, Nehru College of Engineering and Research Centre,
Thrissur , Kerala, India²

ABSTRACT: This system provides a unique method to curb drunken people. The system has an alcohol sensor embedded on the steering of the car. Whenever the driver starts ignition, the sensor measures the content of the alcohol in his breath and automatically switches off the car if he is drunken. In this system the sensor delivers a current with a linear relationship to the alcohol molecules from zero to very high concentration .The output of the sensor is fed to the comparator for comparison. If the measured value reaches the threshold, relay cut off automatically and the buzzer produces sound.

KEYWORDS: lm 358 comparator, MQ-3 alcoholic sensor ,relay ,buzzer

I. INTRODUCTION

This system detects the content of alcohol in the breath and thus it attempts to clamp down alcoholic's .This system uses LM 358 Comparator, LCD display, MQ-3 gas sensor, relay and buzzer. The output of the sensor is directly proportional to the content of alcohol consumed. Nowadays alcohol sensor play a significant role in our society and it has vast applications .This type of sensors in cars is a great safety factor which can be embedded in the steering of the cars. When the driver starts the ignition, sensor measures the content of the alcohol in his breath and automatically switches off the car which will stop the drink driving offenders. Thus we can reduce alcohol related road accidents and hence these kinds of detectors have a great relevance. It can also be used in schools, colleges, offices and some public places such as hospitals, libraries etc.

II.RELATED WORKS

As this is an Embedded system- a combination of hardware and software. The Hardware mainly consists of Alcohol sensor MQ3, Comparator LM358, DC motor. The software used for designing the circuit is proteus.

III.BLOCK DIAGRAM

MQ-3 SENSOR

This is an alcohol sensor, which detects ethanol in the air .Typically; it is used as part of the breathalyzers or breath testers for the detection of ethanol in human breath. Basically it has 6 pins, the cover and the body.

LM 358 COMPARATOR

LM358 is also one of the types of operational amplifier. LM358 consists of two independent, high-gain, frequency-compensated operational amplifiers designed to operate from a single supply over a wide range of voltages.

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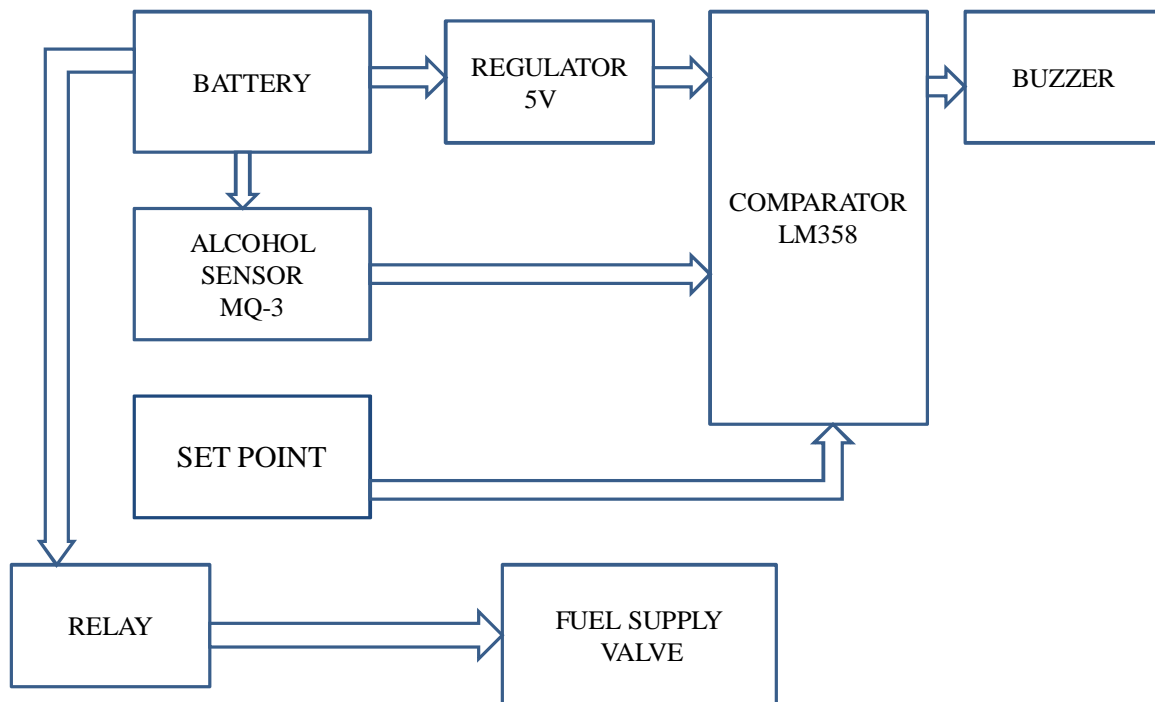


Fig 1: Block Diagram Representation

BATTERY

The battery used here is 8V. The comparator requires 5V supply. So the battery is connected to a regulator and the required 5V is supplied to the V_{cc} of the comparator.

RELAY

The relay used is 12v, DC. The main function of relay control circuit is that when MQ-3 sensor finds alcohol concentration exceeding the standard, it will use control relay to control the vehicle. The relay control interface is connected with fuel supply valve.

IV. CIRCUIT DIAGRAM

In this project we are using op amp IC 358 as comparator. The op amp as comparator mainly used in sensor based projects, in the sensor based projects this comparator is used to monitor the changes occur in the sensor, for the inverting pin we will give some voltage as references (v_{ref}) and at non inverting pin we will give the voltage coming from sensors (v_{in}), so by comparing the references voltage with voltage from sensor we can monitor the changes in sensor at the same time we can trigger the output as we required. (V_o) output = positive voltage, if v_{in} < v_{ref} (V_o) output = 0, if v_{in} > v_{ref} we will give a fixed voltage of 2.5V to the negative comparator and output of mq3 sensor to the

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positive comparator. When there is no alcohol gas the output from sensor is low. So, the positive comparator voltage will be lesser than the negative comparator.

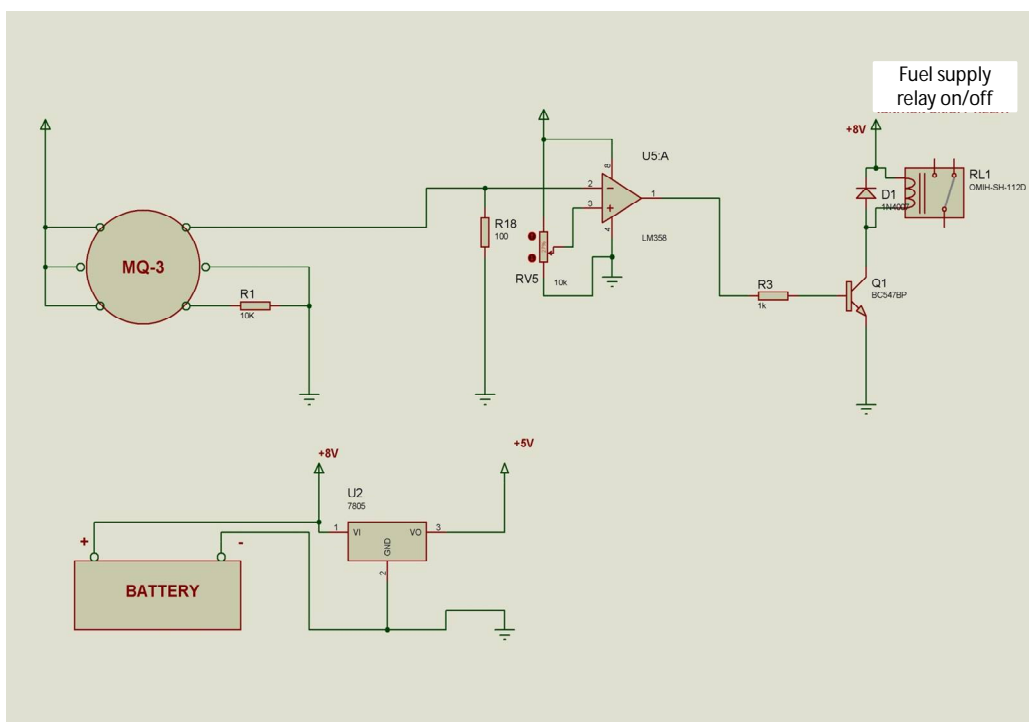


Fig 2: Circuit Diagram

So there is no output to drive the transistor and relay is in off condition and power supply is connected to the vehicle fuel pump motor. When an electronic device such as transistor or mosfet is used to on/off flow of power in circuit, that device is said to be working as an electronic switch. When the base of the transistor receives enough biasing, it switches on, this results in current flow from collector to emitter terminal, when the biasing is removed the transistor turns off and current flow stops. So, by changing the base bias, the transistor can be used as a switch. A relay is a switch operated by magnetic force, which is generated by the flow of current through the coil in the relay. When the power flows through the relay coil, the movable contact is connected to the terminal NO (normally open). When there is no power flowing through the relay coil, the movable contact is connected with NC (normally closed). When alcohol gas is detected, the MQ-3 sensor will generate a voltage higher than 2.5 V. Then the voltage at the positive comparator is greater than the voltage at the negative

V. EXPERIMENTAL RESULTS

Once the drunken driving case is detected, the relay activates. This controls the working of a valve, which controls the supply of the fuel.

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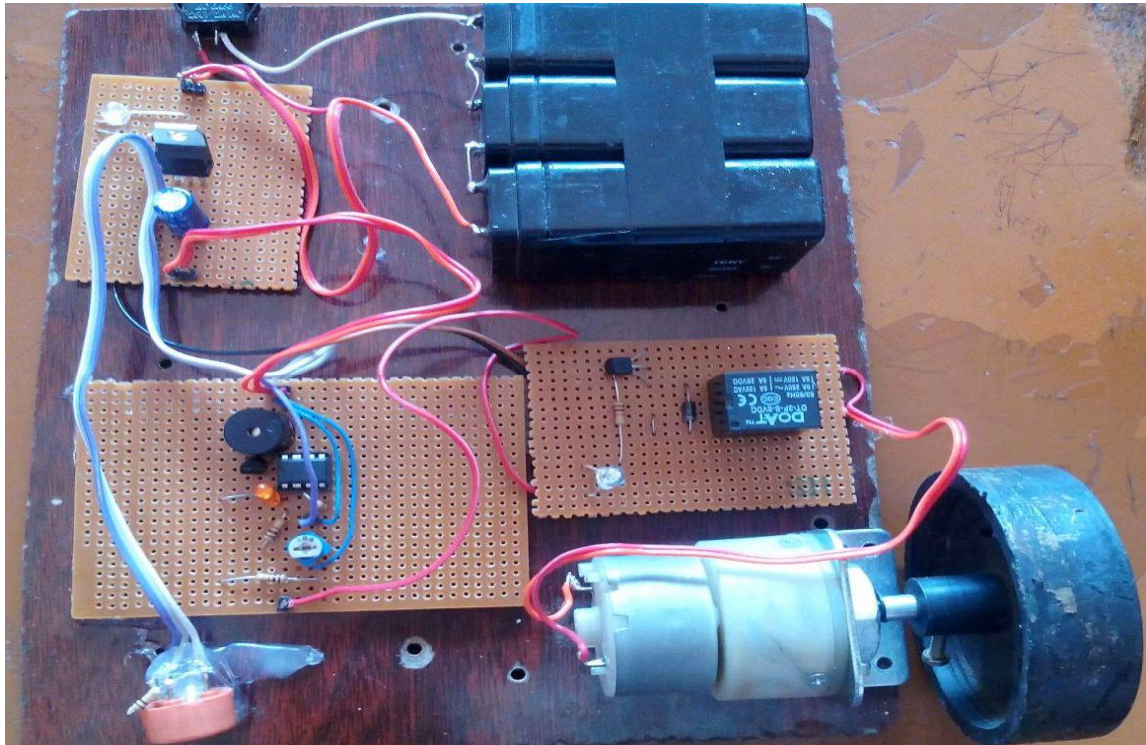


Fig 3: Hardware

VI.RESULT AND DISCUSSION

Thus the Automatic drunken drive prevention in automobiles was completed successfully and the hardware was modeled. This is a developed design to efficiently check drunken driving. By implementing this design a safe car journey is possible decreasing the accident rate due to drinking. By implementing this design, drunken drivers can be controlled so are the accidents due to drunken driving. Government must enforce laws to install such circuit in every car and must regulate all car companies to preinstall such mechanisms while manufacturing the car itself. If this is achieved the deaths due to drunken drivers can be brought to minimum level. In this type of system, future scope can be safely landing of car aside without disturbing other vehicles.

VII. CONCLUSION AND FUTURE WORK

Our project Alcohol Detection System was implemented successfully. This device provides much advanced facilities in now a day's life as it can be easily implemented in vehicles. Thus we can reduce alcohol related road accidents and hence these kinds of detectors have a great relevance. It can also be used in schools, colleges, offices and some public places such as hospitals, libraries etc. Through this project we present comparator to facilitate as Alcohol sensor. The project can be extended to an improved version for preventing drunk drivers from getting on the road with new concept car filled with alcohol detection sensors. These new sensors check a person's odours, sweat, and driver awareness to see if they are capable of driving their car. If they're not quite sober, the car locks up the ignition system thereby preventing the driver from getting on the road. In this project we embedded the sensor on the steering of the car. In addition to the breathalysers, skin sensors can also be provided for more safety.



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BIOGRAPHY



Mr. Unni M R, Assistant professor, has obtained his B.E degree from Anna university, Chennai and M.E degree from Anna university, Tirunelveli in 2009 and 2011 respectively. He is currently serving as Assistant professor in Nehru College of Engineering and Research Centre, Thrissur, Kerala, India. He has 5+year of teaching experience to both undergraduate and postgraduate students



Sona Johnson, UG Student, Dept. of EEE, Nehru College of Engineering and Research Centre, Thrissur, Kerala, India.



Srinidhi.K.V, UG Student, Dept. of EEE, Nehru College of Engineering and Research Centre, Thrissur, Kerala, India.



Veena.T, UG Student, Dept. of EEE, Nehru College of Engineering and Research Centre, Thrissur, Kerala, India.