# Automatic Alcohol Detection In Car

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## ABSTRACT

*The main objective of this system is to design* a *system for implementing* an *efficient alcohol detection system that will be useful to avoid accidents. Many different types of accidents occur in daily life. Accidents may cause because of many reasons it may result in brake failure. Most often accidents occur because of* an over the drunken person. *Though there are laws to punish drunken drivers they can't be fully implemented. Because* the traffic police *cannot stand on every road to examine every driver whether he/she has drunk or not. This can be a major reason for accidents. So there is a requirement for* an *effective system to check drunken drivers.* Therefore, to *avoid these accidents we have implemented a prototype project. This system measures blood alcohol levels from a driver's breath.* The *amount would be detected from sensors mounted ahead of the driver. But the driver wouldn't even have to be compelled to remember they are being monitored this system is equipped with an mq3 sensor, microcontroller, LCD. The mq3 gas sensor is embedded in the steering wheel. An MQ3 gas sensor constantly analyzes the amount of alcohol present in the body of the driver. If the content of alcohol above the prescribed limit is.*

**Keyword: -** *Car Safety System, MQ3 sensor, microcontroller, LCD*

## 1. INTRODUCTION

Getting behind the wheel of a vehicle – car, truck, motorcycle, or the other motor vehicle – after consuming alcohol may be a serious crime. Drinking and driving is sometimes called driving under the influence (DUI) or driving while intoxicated (DWI), and involves operating a vehicle with a blood alcohol content (BAC) level of at least 0.08 percent. However, even a little amount of alcohol can cause harmful situations. Some drivers might not even show warning signs of being under the influence, but that doesn't mean it's any less dangerous. It's important to remember that any sort of drinking and driving is against the law and may accompany strict punishment.

The largest group in danger for drinking and driving are those that binge drink or are battling an alcohol use disorder (AUD). This means they consume an outsized amount of alcohol during a short period of your time, putting them in danger for harmful side effects. It takes roughly 30 minutes to two hours for alcohol to be absorbed into your bloodstream. During this point, your breathing may hamper and your cognitive skills could also be delayed. Because of this, it's always dangerous to drink and drive.

Alcoholism is a condition that can be treated with the help of a specialized treatment center. If you or someone you love is struggling with a drinking problem, it's time to seek help and get your life back on track. Call a treatment provider now to find top-rated rehab facilities that fit your needs

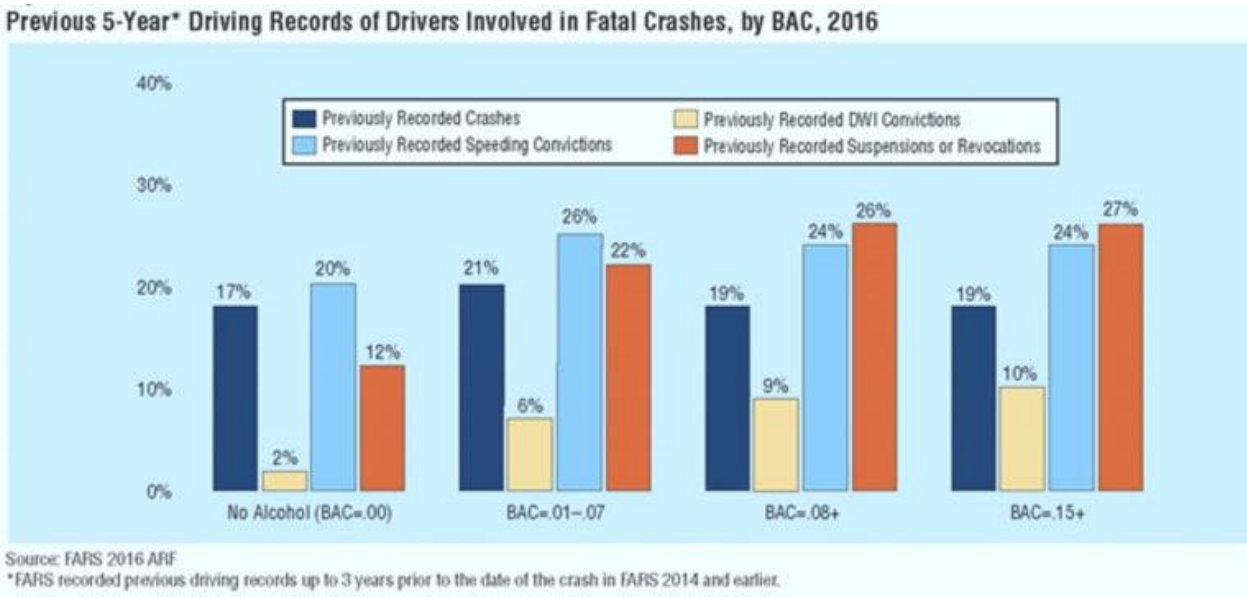



**CHART-1**: Previous Driving record graph

A BAC of 0.09% to 0.25% causes lethargy, sedation balance problems, and blurred vision. This problem results in abnormal co-ordination in the muscle and lower vision which in turn causes road accidents.

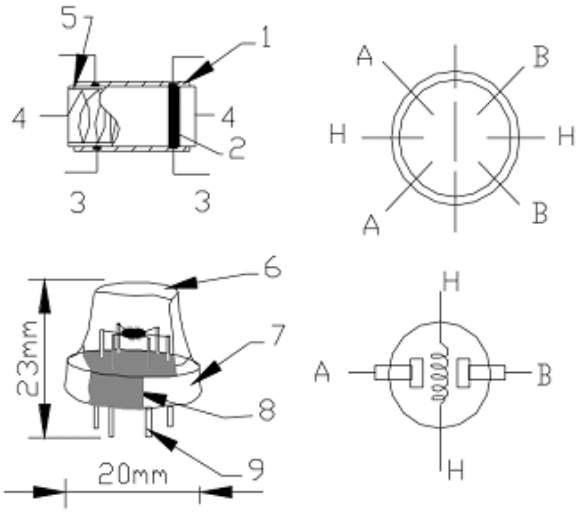
### 1.1. What is Automatic Alcohol Detection?

Automatic Alcohol Detection is a system designed to tackle the growing issue of drunken driving. This system is equipped with an MQ3 gas sensor which is embedded on the steering wheel. MQ3 gas sensor is a specialized sensor for alcohol detection. This sensor is constantly monitoring the content of alcohol in the driver's body and if the content of alcohol is found to be above a specific limit the system automatically stops the car

### 1.2. MQ3 Sensor

The Gas Sensor(MQ3) module is beneficial for gas leakage detection (in home and industry). it's suitable for detecting Alcohol, Benzene, CH4, Hexane, LPG, CO. because of its high sensitivity and fast reaction time, measurements are often taken as soon as possible. The sensitivity of the sensor is often adjusted by using the potentiometer..

**Fig -1:** MQ3 Sensor




| | Parts | Materials |
|---|---|---|
| 1 | Gas sensing layer | $SnO_2$ |
| 2 | Electrode | Au |
| 3 | Electrode line | Pt |
| 4 | Heater coil | Ni-Cr alloy |
| 5 | Tubular ceramic | $Al_2O_3$ |
| 6 | Anti-explosion network | Stainless steel gauze (SUS316 100-mesh) |
| 7 | Clamp ring | Copper plating Ni |
| 8 | Resin base | Bakelite |
| 9 | Tube Pin | Copper plating Ni |

**Fig -2:** MQ3 Structure and Configuration

### 1.3. ATMEGA 16

ATMEGA16 microcontroller is one of the favored controllers in the AVR series. With its features and purchase cost, it became one of the favorite controllers for both hobbyists and engineers. ATMEGA16 programming is analogous to the other AVR controller. It is particularly a clone to ATMEGA32 apart from the memory. Although it has only half the memory of ATMEGA32, it is still more than enough to satisfy most EMBEDDED SYSTEMS.


**Fig -3:** ATMEGA 16

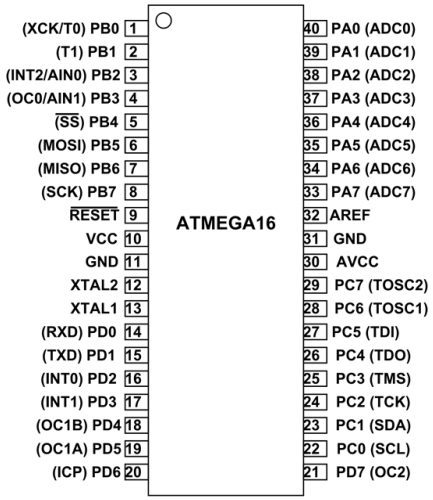



**Fig -4:** ATMEGA 16 Block Diagram

### 1.4. 16X2 LCD

It is a 16 characters and 2 line display. In this project LCD is functioning in 4-bit mode i.e., the data transferred to the LCD must be in a 4-bit data form. The PortA of ATmega16 is connected to data pins of LCD and is defined as LCD_DATA. PortB is defined as control pins (Rs, R/W, and En).LCD contains 3 control lines(RS,R/W &EN) and eight data lines(D0-D7), supply voltage (Vcc) and contrast control (Vee)
and ground(Vss).


**Fig -5:** 16X2 LCD

## 3. BLOCK DIAGRAM AND WORKING

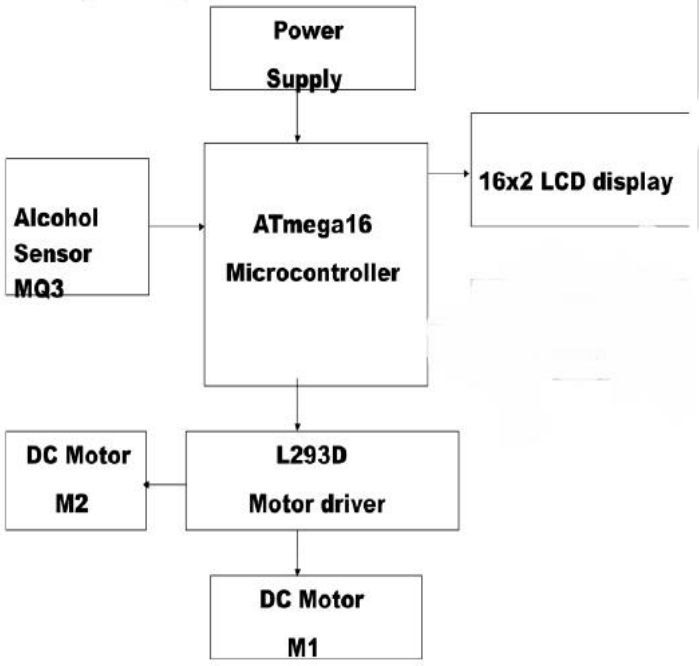



**Fig -6:** Block Diagram

As soon as the power supply is given to the VCC pin of the Microcontroller Avr-ATmega 16, the alcohol sensor MQ3 will detect the alcohol concentration and provides an analog resistive output based on alcohol concentration which is given to the inbuilt ADC of the microcontroller. The inbuilt ADC of the microcontroller will convert this analog resistive output into the digital output that will in the form of an LCD message display that" ALCOHOL DETECTED". Then the microcontroller will give the signal to the L293D driver can generate a signal to the converter of the circuit i.e. increasing firing angle. Also, the DC motor will be controlled by the L293D motor drive. Thus if alcohol is detected then car speed will go on reducing gradually and the car will be stopped.

The system does not directly stop the engine; it sends a signal to the L293D motor driver. The L293D motor driver cuts the fuel supply and the engine turns off slowly. This is because if the driver is at high speed and stars to drink while driving the car doesn't stop abruptly and give a jerk to the driver. This may be injurious to the driver as well the other vehicles driving behind him

This system will be very useful in the prevention of road accidents and thus saving the lives of people inside the as well as on roads

## 4. CONCLUSION

Our system efficiently checks the accidents occur or not and drunken driving. By implementing this technique in vehicles, a secure journey is feasible which might decrease the injuries during accidents and also reduce the accident rate thanks to drunken driving. This system has also accident prevention technology which might reduce the accident of the vehicle in crowd areas. The proposed system will resourcefully detect alcohol through the driver's breath and stop the vehicle by interrupting the ignition, rather than directly stopping the vehicle. We can implement a mechanism to cut off fuel supply instead of stopping the ignition system directly because a direct stop of the ignition system on detecting alcohol may be dangerous as a driver driving a vehicle at a high speed and it may lead to the chance of an accident, so after cutoff fuel supply driver will place a proper position

## 5. REFERENCES

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