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Smart Helmet Base Alcohol Detection and Auto Ignition Control System

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SMART HELMET BASE ALCOHOL DETECTION AND AUTO IGNITION CONTROL SYSTEM

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Abstract: *In this paper, an alcohol detection was developed for road transportation system. It is method of preventing vehicles from starting when the driver is not wearing a helmet. When the NODEMCU ESP 8266 detects a high alcohol signal from the MQ3 alcohol sensor, the DC motor stops and the buzzer alarm sounds, indicating engine lockout. To start the engine, the device requires a push button. If alcohol is detected during engine start up the engine will not start at all. If alcohol is detected during engine start up then the system will lock and send message including vehicle location and speed of that vehicle to the relatives mobile number which was pre-saved in that system.*

Keywords: *Arduino Uno alcohol sensor module(MQ3), LCD display, Buzzer, Relay switch.*

II INTRODUCTION

Drunk driving is currently a serious public health issue that is expected to become one of the most serious issues in the near future. The mechanism in place seeks to reduce road accidents caused by drunk drivers in the near future. This paper details the progress made in employing an alcohol detector, which is a device that detects changes in the alcoholic gas content of the surrounding air. It is also known as a breath analyser since it analyses the alcohol level of a person's breath. When the system detects the presence of alcohol in the vehicle, the engine is immediately locked.

When the sensor detects alcohol, the ESP 8266 microcontroller transmits the needed voltage to the buzzer, which automatically turns off the vehicle's ignition and displays the proportion of alcohol consumed.

The microcontroller monitors the condition of the ignition by using a relay switch.

The regular default limit is set at 456 points, according to the application. The buzzer and relay switch both activate and perform their functions. In addition, the microcontroller communicates with the server (UBIDOTS) through wife. So that it sends an alarm message / mail to the Here, a software written in C Language has been built in such a way that anytime the limit of alcohol content surpasses 456, mail will be sent over the cloud and server.

Facilities required for proposed work:

Hardware Requirement

1) ESP 8266 WIFI MODULE
2) VOLTAGE REGULATOR(7805)
3) DC MOTOR
4) BUZZER/ALARM / LED
5) MQ-03 ALCOHOL SENSOR
6) WIFI MODULE
7) LIMIT SWITCH

III .ARDUINO BOARD

The arguing board serves as the system's brain. The AT mega 328 microcontroller board is used in the Arduinouno. It's an electromechanical prototype microcontroller with programmable capabilities. It includes 14 digital input/output pins (six of which can be utilized as PWM outputs), six analogue inputs, and sixteen MHz ceramic resonators. The arduino is

different from the other boards in that it does not use the FTDI USB to serial driver chip.

Fig. 1 Arduino Board Discription

III. ALCOHOL SENSOR (MQ3)

The MQ3 alcohol gas sensor is designed to detect alcohol and can be used in a breath analyzer. Alcohol sensitivity is strong, but benzene sensitivity is low. The sensitivity of the MQ3 gas sensor can be changed using the potentiometer. The sensitive material is SnO2, which has a reduced conductivity in clean air. When the target alcohol gas is present, the sensors conductivity increases along with the gas concentration, and a simple electrical circuit is used to convert the change in conductivity to a gas concentration output signal. The MQ-3 gas sensor has a high sensitivity to alcohol and is resistant to fuel, smoke, and vapour interference. It has a 2 metre fine sensitivity range. The sensor can detect varied concentrations of alcohol; it is inexpensive and suited for a variety of applications.

Fig. 2. Alcohol Sensor

Sensitivity Adjustment:

The resistance value of MQ-3 varies depending on the kind and concentration of gas. As a result, sensitivity adjustment is essential while using these components. It is advised that the detector be calibrated for an alcohol content in air of 0.4 mg/L (about 200ppm) and a load resistance of 200 K (100K to 470 K). When measuring properly, the proper alert point for the gas detector must be determined after taking temperature and humidity into account.

Character configuration:

1. Alcohol gas sensitivity is good.

2. The circuit is simply powered.

3. Low cost and long service life

4. Low sensitivity to benzene and high sensitivity to alcohol.

5. High sensitivity and stability, as well as a lengthy life span.

Specification:

1. A 5 volt power supply is required.

2. Type of interference: just analogue.

3. Pin requirements: 1 output, 2 GND, 3 VCC

4. High sensitivity and quick reaction

5. Long life and stability

6. Low sensitivity to benzene, but high sensitivity to alcohol Simple drive circuit, 40*20mm in size.

Buzzer

1. The PS series of buzzers are high-performance buzzers with unimorph piezoelectric elements that are easy to integrate into various circuits.

2. In comparison to electromagnetic equipment, they consume very little power.

3. Because these buzzers are built for external stimulation, they can function as a musical tone oscillator and a buzzer at the same time.

4. They can be used with automated inserters, and there are moisture-resistant models available.

Fig. 3 Buzzer

ADVANTAGES

1. To avoid an accident caused by intoxicated driving.

2. Testing the alcohol concentration in the body is simple and quick.

3. Accurate and quick results

4. It assists police officers and provides automatic safety measures for cars and other vehicles.

5. An autonomous safety system for cars and other vehicles is provided by an alcohol detecting system in autos.

DISADVANTAGES

1. Damage to the sensor is undetectable.

2. It is a one-time investment.

3. The use of relays consumes more energy.

APPLICATIONS

1. The alcohol detector project can be installed in a variety of automobiles to detect whether or not the driver has ingested alcohol.

2. This can be utilised in a variety of firms or organisations to detect employee alcohol consumption.

FUTURE OBJECTIVES:

1. We can use GSM technology to notify relatives or car owners about alcohol consumption.

2. We can use GPS technology to track the vehicle's whereabouts.

3. The configuration is simple, which allows it to adapt to future needs without having to construct everything from start, making it more efficient.

4. This can be changed to allow communication with the vehicle owner via GSM modem.

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