

Alcohol Sensor Engine Lock System Using Arduino

Samarth Kulkarni, Pratik Borse, Pranav Patil, Piyush Lone, Prof. R. S. Taday

Department of Electronic and Telecommunication
Guru Gobind Singh Polytechnic, Nashik, India

Abstract: *The Alcohol Sensor Engine Lock System using Arduino is an advanced safety mechanism designed to mitigate accidents caused by drunk driving. This paper presents a comprehensive study of a prototype system that integrates an MQ-3 alcohol sensor, Arduino microcontroller, and an engine-locking mechanism. The system operates by analyzing the driver's breath for alcohol concentration levels. When the alcohol level exceeds a predefined threshold, the Arduino microcontroller processes the sensor data and activates a relay to disable the vehicle's ignition system, effectively locking the engine.*

Keywords: Alcohol Detection , Engine Lock System , MQ3 Sensor

I. INTRODUCTION

Drunk driving remains one of the leading causes of road accidents globally, resulting in severe injuries, fatalities, and property damage. Despite stringent laws and awareness campaigns, the challenge of ensuring responsible driving persists. To address this critical issue, the integration of technology into vehicle safety systems offers promising solutions. Hence this paper revolves around IoT technology which will monitor all the parameters such as temperature, humidity, door status and decision making will be done by means of Arduino microcontroller.

Proposed Project Work

The proposed project focuses on the design and implementation of an Alcohol Sensor Engine Lock System using Arduino to enhance vehicle safety by preventing drunk driving. The system aims to detect alcohol in the driver's breath, evaluate its concentration, the vehicle if the detected alcohol level exceeds a predefined threshold.

System Architecture:

The system is divided into given sections:

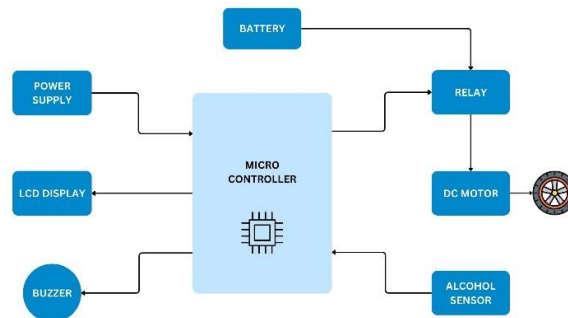


Fig: System architecture

Stage 1: In the first stage, microcontroller is assemble to receive parameters from MQ3 sensor

Stage 2: In the second stage, the hardware components are assembled..

Stage 3: In the third stage, the arduino is programmed to control the system. The Arduino can be programmed using the Arduino IDE and can be connected to the MQ3 sensor and other components and control circuit via GSM.

Stage 4: In the fourth stage, the system is tested and optimized for efficiency and performance. The arduino can be used to monitor the temperature of the two surfaces,

Overall, the system architecture of the system with Arduino involves the design and assembly of hardware components, programming of the arduino for control and monitoring, and testing and optimization for efficiency and performance.

Advantages:

- Enhanced Road Safety
- Cost-Effective Solution
- Compact and Easy to Install
- Real-Time Detection
- Customizable Threshold Levels
- Visual And Auditory Alerts

Applications:

- Personal Vehicles.
- Commercial Fleet.
- Public Transportation.
- School Transportation.
- Emergency Vehicles

II. CONCLUSION

The Alcohol Sensor Engine Lock System using Arduino provides an effective and technologically driven solution to combat drunk driving. By utilizing an MQ-3 alcohol sensor and Arduino microcontroller, the system ensures that vehicles cannot be operated by individuals under the influence of alcohol. This not only helps to reduce road accidents but also promotes responsible driving behavior.

REFERENCES

- [1]. For Arduino tutorials, documentation, and hardware details. <https://www.arduino.cc/>
- [2]. Circuit designs, project examples, and programming resources. <https://circuitdigest.com/>