A Review on Smoke Sensor & Auto Cut Off System for Motor Bike Health Monitoring System

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Abstract

In today's time the number of motorbikes are increasing rapidly also the number of accidents are increasing due to the carelessness of the bike riders. Sometimes the riders don't know where the problem is in the bike. So it becomes essential to develop a monitoring system which will monitor the different parameters for the life of the bike's health as well as for the safety of the bike rider. So as monitoring system different sensor can be used and then the parameters are measured and from that values it can be seen easily that whether the condition of the bike is proper or not. By using this system in the bikes the efficiency as well as life of bike will increase.

Keywords: Smoke Sensor, Limit Switch, Motor Bike, Alert System

I. INTRODUCTION

Nowadays we can see number of bikes on the roads. Every bike has its own specifications according to the model and the company. The maintenance of the bikes is required to it time to time. To maintain the efficiency and safety of the bikes are also important to the riders as well as for the trespassers also. As the bike runs its efficiency changes and the rate of replacement of the parts of the bikes also changes. So at this time the monitoring of all the parameters which affect the health of a bike becomes essential. The changes which come day by day should be known to the biker for his safety as well as service point of view. For that a monitoring of the bike's health system is to be made. The best time for the maintenance or service or replacement of the part can be known by putting this health monitoring system. This system can be made but putting different sensors for measuring different parameters.

II. COMPONENTS

A. MQ-135 Smoke Sensor

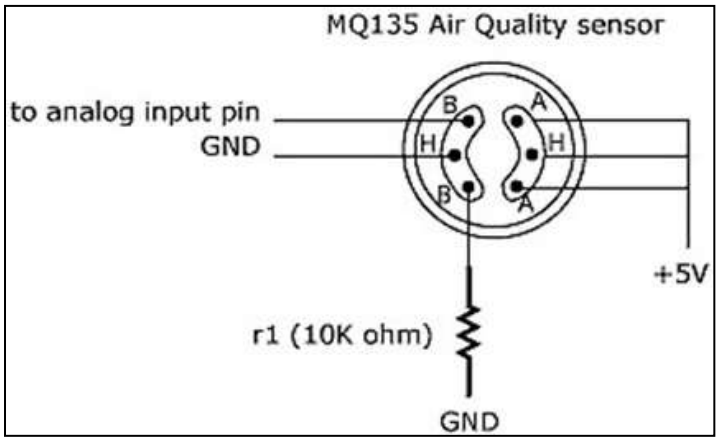

Fig. 1: MQ-135 Air Quality Sensor

– The MQ-135 sensor consists of a tin oxide (SnO2), a perspective layer inside aluminum oxide micro tubes (measuring electrodes) and a heating element inside a tubular casing.

- The end face of the sensor is enclosed by stainless net and the back side holds the connection terminals.
- Smoke contents are present in the air passing through the heat element. By using the external load resistance the resistance variation is converted into a suitable voltage variation.

B. Arduino UNO

Fig. 2: Arduino UNO

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. The Arduino Uno can be powered via the USB connection or with an external power supply. The power source is selected automatically. External (non-USB) power can come either from an AC-to-DC adapter (wall-wart) or battery. The adapter can be connected by plugging a 2.1mm centre-positive plug into the board's power jack. Leads from a battery can be inserted in the Gnd and Vin pin headers of the POWER connector. The board can operate on an external supply of 6 to 20 volts. If supplied with less than 7V, however, the 5V pin may supply less than five volts and the board may be unstable. If using more than 12V, the voltage regulator may overheat and damage the board. The recommended range is 7 to 12 volts.

C. Limit Switch

Fig. 3: Limit Switch

These initial positions are detected by limit switches. The PC arranges that every servo engine ventures totally one way until the point that an utmost switch on every hub is activated. The position counter for every hub is reset to zero when as far as possible switch identifies that the underlying position has been come to. A run of as far as possible switch configuration utilizes a switch with a roller tip to reach the moving part. The screw terminals on the switch body give association focuses the NC and NO contacts inside the switch. The majority of the farthest point switches in this plan share a "typical" terminal between the NC and NO contacts this way:

This switch contact course of action is once in a while alluded to as a frame C contact set, since it joins both a shape A contact (ordinarily open) and in addition a shape B contact (typically shut).

*D. 16*2 Display*

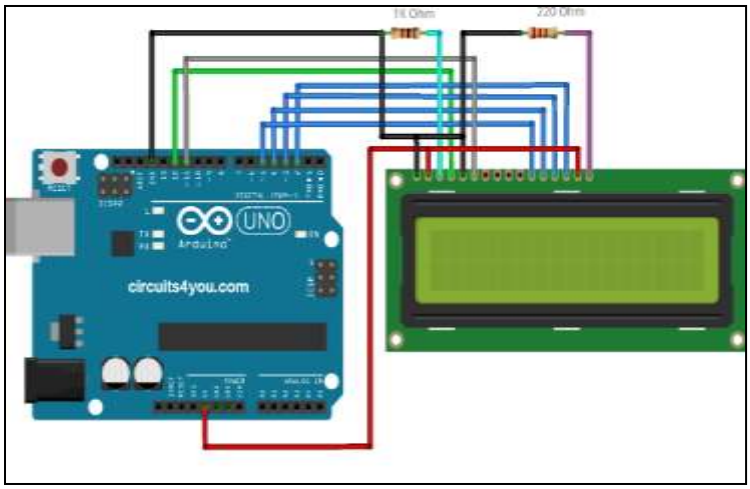

Fig. 4: Interfacing Arduino to Display

LCD display consists of following pins:

- Power Supply pins (Vss/Vcc): Power the LCD
- Contrast pin (Vo): Control the display contrast
- Register Select (RS) pin: Controls where in the LCD's memory you're writing data to
- Read/Write (R/W): Selects reading mode or writing mode
- Enable pin: Enables writing to the registers
- 8 data pins (D0 -D7): The states of these pins (high or low) are the bits that you're writing to a register when you write, or the values you're reading when you read.
  As shown in figure pin configuration is done of arduino with the lcd display. The pin configuration is needed to be done as below
- LCD RS pin to digital pin12
- LCD Enable pin to digital pin 11
- LCD D4 pin to digital pin 5
- LCD D5 pin to digital pin 4
- LCD D6 pin to digital pin 3
- LCD D7 pin to digital pin 2
- Interfacing Arduino with MQ135
  There are 4 pins in the Mq135 sensor. They are A0 for Analog output, D0 digital output, GND for ground, Vcc for supply 5v.
- For connecting it with the Arduino the 4 pins are connected to the arduino.
- Arduino A0 pin with sensor A0
- Arduino D0 pin with sensor D0
- Arduino 5V pin with Sensor Vcc
- Arduino GND pin with sensor GND

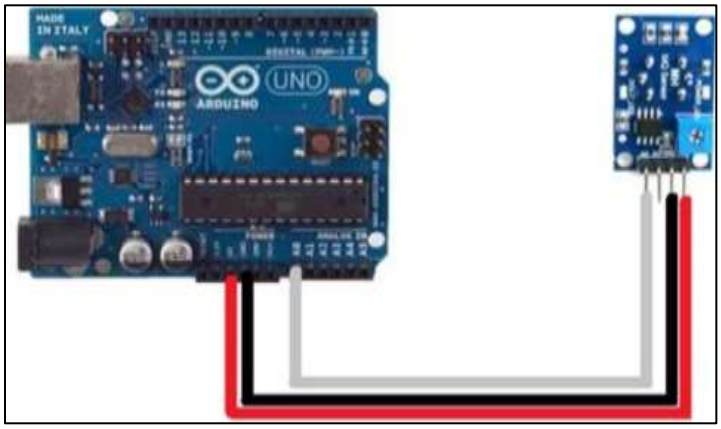

Fig. 5: Interfacing Arduino with MQ135

III. LITERATURE REVIEW

Motorcycle Emissions, Chemonics International [1] It is suggested that emission standards for new motorcycles includes the strictest limits for CO and HC emissions. The proposed emission standards for in-use motorcycles are as follows. CO 2.5%, HC 900 ppm ,Opacity 5%.As motorcycles use gasoline, the composition of their exhaust emissions is similar to that of gasoline-operated vehicle emissions. Mainly, emissions contain carbon monoxide (CO), unburned hydrocarbons (HC), and particulate matter (PM). However, emission of two-stroke motorcycles has larger quantities of unburned HC and PM (smoke).

So it becomes essential for the rider to know what the emission rates of his own bike are actively so that he could know the condition of his bike's engine.

IV. CONCLUSION

- By applying the above system in the present motorbikes the rider will get many information which are not known in the bikes generally. This will reduce the breakdown of the bike on the roads.
- As the monitoring system will show that when the service is needed to the bike then the life of the engine will also increase which is a desirable condition of the bike rider.
- Using the side stand cut off system will surely reduce the number of the accident. As the bike will never start if the side stand will be down if the system is installed.

REFERENCE

[1] Motorcycle Emissions, Chemonics International, Inc. USAID/Egypt, Office of Environment USAID Contract No. 263-C-00-97-00090-00