TWO WHEELER SERVICING INSPECTION SYSTEM

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Abstract- This report represents an application implemented on a two wheeler Servicing Inspection system using an ATMEGA 2560 microcontroller. The program controls outputs in sequential order and it is loaded onto the memory of the microcontroller. Each output is activated only when the system receives information about the previous command. These commands are highlighted by an optical LED display. Arduino is easily available in market at low cost and it is open source licenses hence arduino microcontroller is used. For the programming of arduino IDE software is used. And this software is easily available on net and easy to programming.

Keywords - Two Wheeler, Arduino mega2560, Sensors, Battery

I. INTRODUCTION

Nowadays servicing problem of vehicles is detected by manually. Our project is going to detect such type of problems by using various types of sensors. In the time of servicing of two wheelers to detect the condition of vehicle with the help of different type of sensor measure the some parameter like tyre pressure, oil level indicator, battery voltage, emission, etc. That all parameter we can see digitally on the monitor screen or LCD displayed by using sensors. This all parameters run by using the arduino microcontroller Ease of Use.

II. Component

- Arduino Mega2560
- Sensors
- Breadboard
- Battery(9v)
- USB cable
- Jumper Wire
- LED bulb
- Resistors

III. Microcontroller (Arduino Mega2560)

Fig. Arduino ATMega2560

Arduino is an open source physical computing platform based on a simple in- put/output (I/O) board and a development environment that implements the Processing language. Arduino can be used to develop application or object can be connected to soft-ware on your computer. The boards can be assembled manually or purchased preassembled the open source IDE (Integrated Development Environment) can be downloaded for free from www.arduino.cc Arduino is different from other platforms on the market because of these features:

It is a multiplatform environment it can run on Windows Macintosh, and Linux. It is based on the Processing programming IDE, an easy-to-use development environment

Used by artists and designers. We program it via a USB cable, not a serial port. This feature is useful, because many modern computers don't have serial ports. It is open source hardware and software-if you wish, you can download the circuit diagram, buy all the components, and make your own, without paying anything to the makers of Arduino

1. Arduino specifications

- Microcontroller ATmega2560,
- Operating Voltage 5V
- Input Voltage (recommended) 7-12V,
- Input Voltage (limits) 6-20V
- Analog Input Pins 16
- Digital I/O Pins 54 (of which 14 provide PWM output)
- DC Current per I/O Pin 40 mA
- DC Current for 3.3V Pin 50 mA
- Flash Memory 256 KB of which 8 KB used by boot loader
- SRAM 8 KB,
- EEPROM 4 KB
- Clock Speed 16 MHz

IV. Breadboard

A breadboard is a circuit board that is used to make temporary circuits. It is a device having electronics and test circuit designs. The electronic elements inside the electronic circuits can be interchanged by inserting the terminals and leads into holes and later connecting it with the help of appropriate wires

V. Sensors

1. Vibration Sensor

Vibration sensors are sensors for measuring, displaying and analyzing linear velocity, displacement and proximity or acceleration. Vibration analysis is used as a tool to determine equipment condition as well as specific location and type of problem

1.1. Specification of Vibration Sensor

- Sensor name –ADXL335
- 3-axis sensing
- Single-supply operation 1.8 V to 3.6 V
- Excellent temperature stability

1.2. Pin Connection

- GND-To be connected to Arduino's GND
- VCC-To be connected to Arduino's 5V
- X-To be connected to Analog Pin A5
- Y-To be connected to Analog Pin A4
- Z-To be connected to Analog Pin A3

1.3. Interfacing of Vibration sensor

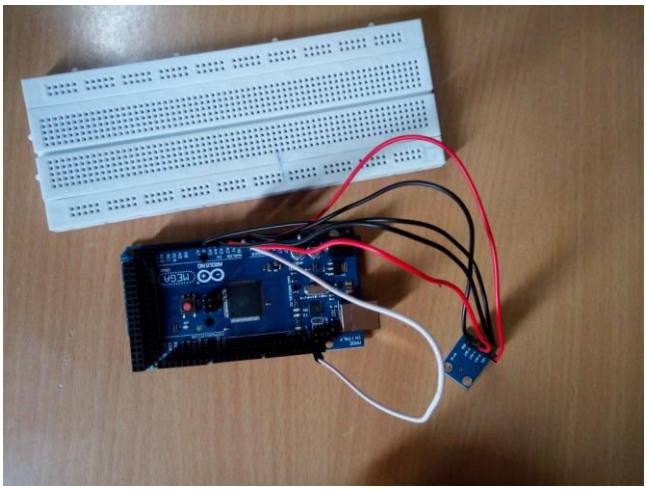

Fig. Interfering of vibration sensor

1.4. Digital output of vibration sensor

When sensor is connected to the arduino and sensor put on the two wheeler then sensor sense the vibration in three axis and send the data to arduino and shown in the arduino softwar

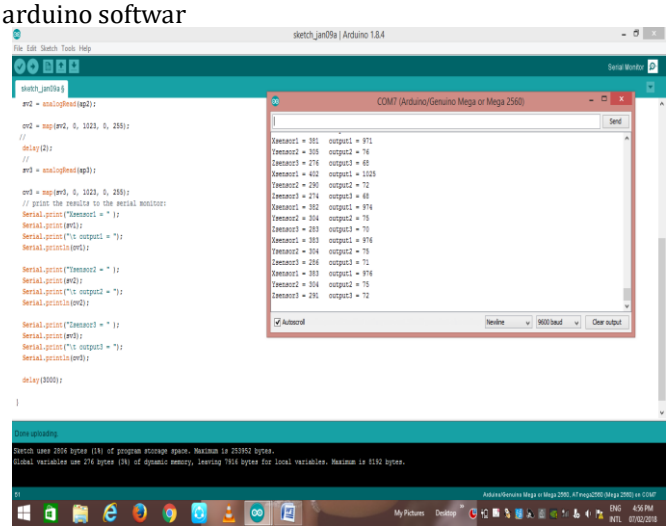

Fig. outputs of Vibration Sensor (screenshot)

2. Emission sensor(MQ-135)

2.1. Specification of MQ-135 gas sensor

- Wide detecting scope
- Fast response and High sensitivity
- Stable and long life Simple drive circuit
- Used in air quality control equipment for buildings/offices, is suitable for detecting of NH3, NOx, alcohol, Benzene, smoke, CO2, etc.
- Size: 35mm x 22mm x 23mm (length x width x height)
- Working voltage: DC 5 V
- Signal output instruction.
- Dual signal output (analog output, and high/low digital output) 0 ~ 4.2V analog output voltage, the higher the concentration the higher the voltage

2.2. Interfacing of MQ-135 Gas Sensor with arduino

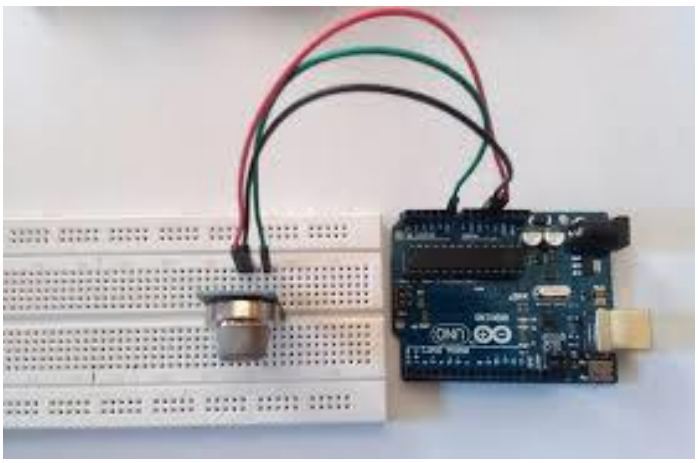

Fig. Interfecing of MQ-135 Sensor

In today's world, we encounter different scenario where we see different gasses being emitted in atmosphere such as home appliances like air conditioner and industrial chimneys. Monitoring of these gasses is very important to safety point of view. Gas Sensors are very helpful in

accomplishing this task. Small nose like sensor spontaneously responds to the alteration of gas concentration and keep our systems updated for special tasks. Pin Configuration MQ-135 gases sensor..

2.3. Digital output of Emission Sensor

When sensor is connected to arduino and sensor put on the two wheeler silencer then sensor sense the various gases and send dada to arduino and shown in the arduino software (IDE).

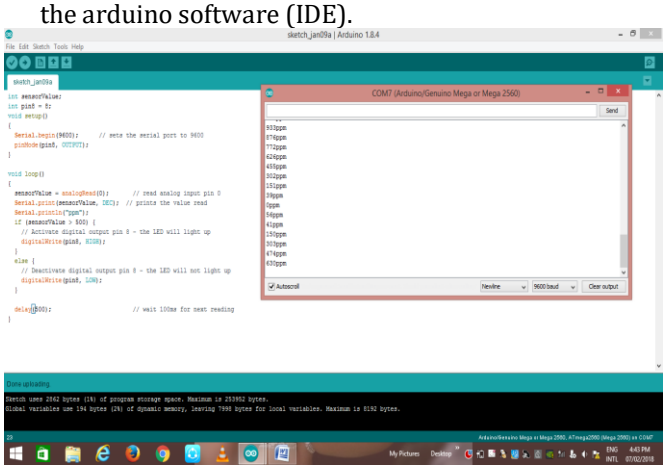

Fig. Outputs of MQ-135 (screenshot)

3. Oil level indicating sensor

In the oil level sensor two copper strips are used when we supply the voltage to copper strips and these strips put in the oil tank then oil is covered with strips due to oil voltage is changing and this change in voltage is converted into a liter.

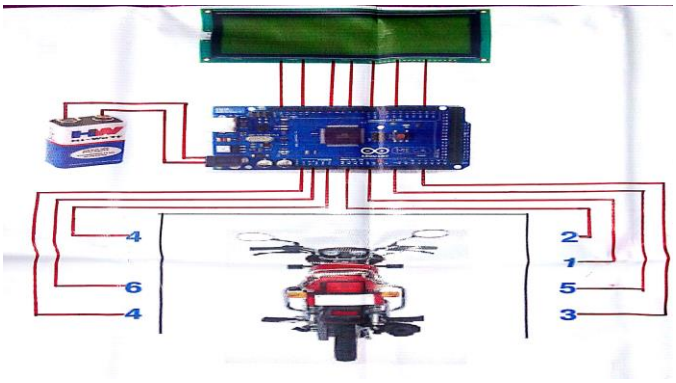

Fig. Methodology

4. Pressure sensors

A pressure sensor is a device equipped with pressure sensitive element that measures the pressure of a gas or a liquid against a diaphragm made of stainless steel, silicon, etc. and converts the measured value into an electrical signal as an output.

VI. Methodology

When two wheeler is coming to service station for servicing in that time two wheeler is parking on the stand then various sensors mount on two wheeler such as pressure sensor
at tyre of bike, oil level indicator sensor put in the oil tank, vibration sensor mount on the engine and other part of bike to check the vibration of various part, Emission sensor are mount in the silencer to check the exhaust gas like CO2,NOX etc. Through the wire connection check the voltage of battery. By using such sensors we analog signal and pass to the arduino. Arduino process the signal and convert it into digital signal and shows on digital display or computer. Below number shows the where sensor attached to stand

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footnotes separately in superscripts.Place the actual footnote at the bottom of the column in which it was cited.