TOXIC GAS SAFEGUARD IN AUTOMOBILES

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ABSTRACT

We have pleasure to introducing our new project **"TOXIC GAS SAFEGUARD IN AUTOMOBILES".** This project is based on the gas detection in the car. Sensors are used to detect the gases present in the certain area. So, this device is used in car to detect the gas level present inside car. Because many death occurs in car due to breathing problems by air conditioner or by smoking inside the car causes suffocation inside the car that effect unconsciousness death and this device in the car is to detect the gas level of oxygen depletion or exceed of any harmful gases and it gives signal to the Arduino and it controls the car's windows motor and it opens the window, it allows atmospheric air inside the car, which helps to breath. Hence,we can reduce the accident and death rate by this project.

Keywords: Arduino,Sensors,Oxygendepletion.

I . INTRODUCTION

Present industry is increasingly shifting towards automation. Two principle components of today's industrial automations are programmable controllers and robots. In order to aid the tedious work and to serve the mankind, today there is a general tendency to develop an intelligent operation.This project idea was selected because we all are interested in working with and learning about sensors, Embedded, and automobile electronics. We are excited about this project because we will be building and testing our own sensor system and implementing it into a vehicle. In the cold winter or hot summer, many motorists like a long time to open the car air conditioning, due to the small interior space, doors and windows closed, the air inside and outside the car difficult to form convection, long-term operation of the engine will emit large amounts of carbon monoxide, these part of the gas into the car, and a long stay in the car, the occupants will be monoxide poisoning unknowingly lose severe life.

ARDUINO is the heart of the device which handles all the sub devices connected across it. It has flash type reprogrammable memory. It has some peripheral devices to play this project perform.It also provides sufficient power to inbuilt peripheral devices. We need not give individually to all devices. The peripheral devices also activates as low power operation mode. These are the advantages are appear here.

II. NEED FOR AUTOMATION

Automation can be achieved through computers, hydraulics, pneumatics, robotics, etc., of these sources, pneumatics form an attractive medium for

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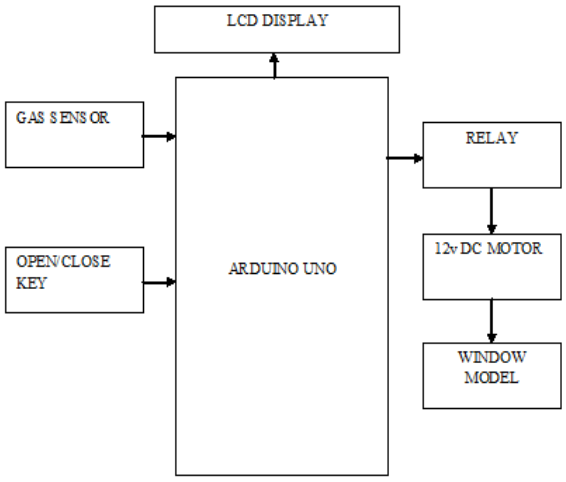
low cost automation. The main advantages of all automatic systems are economy and simplicity. Automation plays an important role in mass production.Nowadays almost all the manufacturing process is being atomized in order to deliver the products at a faster rate. We all want to design machine that makes things better, avoiding the bad things that lurk in the shadow of failed efforts. To succeed we need discipline when machine is designed and built. As a result, the quality of the machine that we produce suffers and bad things happen.

III. LITERATURE REVIEW

To evaluate the performance of gas sensing methods or gas sensors, several indicators should be considered: (1) sensitivity: the minimum value of target gases' volume concentration when they could be detected; (2) selectivity: the ability of gas sensors to identify a specific gas among a gas mixture; (3) response time: the period from the time when gas concentration reaches a specific value to that when sensor generates a warning signal; (4) energy consumption; (5) reversibility: whether the sensing materials could return to its original state after detection; (6) adsorptive capacity (also affects sensitivity and selectivity); (7) fabrication cost. More indicators for different sensing methods will be listed and compared in Section 4.Besides, gas sensors designed for the market must guarantee the stability of their operation, in other words, they should exhibit a stable and reproducible signal for a period of time. There are several factors leading to gas sensor's instability (extracted and concluded from [116].Design errors (which should be avoided); (2) structural changes, such as variations of grain size or grain network; (3) phase shifts, which usually refers to the segregation of additives doped with sensing materials; (4) poisoning triggered by chemical reactions; (5) variation of the surrounding environment. In order to solve these problems, the following methods could be considered: (1) using materials with chemical and thermal stability; (2) optimizing elemental composition and grain size of sensing materials; (3) utilizing specific technology during surface pre-treatment of sensors.

IV. BLOCK DIAGRAM



V. ARDUINO UNO

Technical specs

Microcontroller	ATmega328P
Operating Voltage	5V
Input Voltage (recommended)	7-12V
Input Voltage (limit)	6-20V
Digital I/O Pins	14 (of which 6 provide PWM output)
PWM Digital I/O Pins	6
Analog Input Pins	6
DC Current per I/O Pin	20 mA
DC Current for 3.3V Pin	50 Ma

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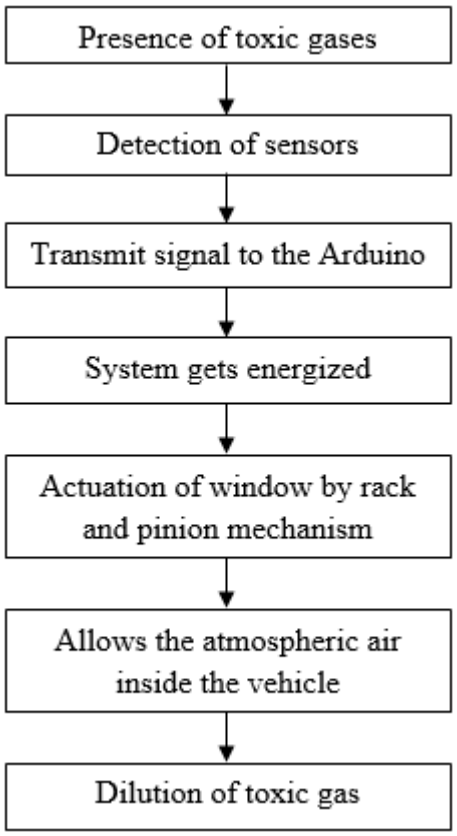
Flash Memory	32KB (ATmega328P) of which 0.5KB used by bootloader
SRAM	2KB (ATmega328P)
EEPROM	1KB (ATmega328P)
Clock Speed	16 MHz
Length	68.6 mm
Width	53.4 mm
Weight	25 g

VI. GAS SENSOR

Electrochemical gas sensors are gas detectors that measure the concentration of a target gas by oxidizing or reducing the target gas at an electrode and measuring the resulting current.The sensors contain two or three electrodes, occasionally four, in contact with an electrolyte. The electrodes are typically fabricated by fixing a high surface area precious metal on to the porous hydrophobic membrane. The working electrode contacts both the electrolyte and the ambient air to be monitored usually via a porous membrane. The electrolyte most commonly used is a mineral acid, but organic electrolytes are also used for some sensors. The electrodes and housing are usually in a plastic housing which contains a gas entry hole for the gas and electrical contacts.

VII. WORKING PRINCIPLE

In this project, we used two Arduino board,which is connected with the sensors program is loaded in the board and it's passed to the rack and pinion mechanism, then it is easy to open the window at the right time needed and it's easy to save many lifes.



A power supply is taken from battery to relay and motor unit. It is connected with arduino board. The sensor is used to sense the gas and temperature and it is connected with the Arduino board, it does the work by controlling the whole system by means of program. Arduino gets the signal from sensor and actuates the rack and pinion mechanism with the help of relay and motor unit.The main conclusion is to the output program shows the actuating windows at the right time and saves the many lives at the different aspects. So, it is attaining by the only way the sensors as automation.

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VIII. CONCLUSION

The progress in science & technology is a non-stop process. New things and new technology are being invented. As the technology grows day by day, we can imagine about the future in which thing we may occupy every place.The proposed system based on ARDUINO is found to be more compact, user friendly and less complex, which can readily be used in order to perform. Several tedious and repetitive tasks. Though it is designed keeping in mind about the need for industry, it can extended for other purposes such as commercial & research applications. Due to the probability of high technology used this project is fully software controlled with less hardware circuit. The feature makes this system is the base for future systems.The principle of the development of science is that “nothing is impossible”. So we shall look forward to a bright & sophisticated world.

IX. FUTURE SCOPE OF THE PROJECT

Sensors have made serious inroads into automotive, medical, industrial, and aerospace applications. But you aren’t seen nothing ‘yet. Rising concerns for safety, convenience, entertainment, and efficiency factors, coupled with worldwide government mandates, will see sensor usage swell to unprecedented levels. Add to that the predicted explosion in wireless and consumer applications, and one can see why sensor manufacturers anticipate quickly developing huge markets and applications through the end of this decade. Most of these sensors will be of the Micro Electro Mechanical System (MEMS) and Micro System Technology (MST) type, with Nan sensors showing great promise.

REFERENCES

1. International journal of advance engineering and research development volume 2, issue 1, january - 2015 design of different parts of power window in automobile,k.r.pateliy1r.c.technicalinstitute, pandeybright@gmail.com.
2. P. Jasinski, T. Suzuki, H. U. Anderson, "Nanocrystalline undoped ceria oxygensensor", Sens. Actuators B Chem., vol. 95, no. 1, pp. 73-77, 2003.
3. International Journal of Science and Research (IJSR) ISSN (Online): 2319-
4. 7064 Index Copernicus Value (2013): 6.14 | Impact Factor (2013): 4.438 Volume 4 Issue 4, April 2015 www.ijsr.net Licensed Under Creative Commons Attribution CC BY Automatic Sliding Window Sumit P Patil1 , Jignesh R Dhabuwala2 , Liyakat Ali Patel3.
5. Analysis, synchronization and circuit design of a novel butterfly attractor,Volume 333, Issue 20, January 2014, Pages 5077-5096.Ihsan Pehlivan | Irene M. Moroz | Sundarapandian Vaidyanathan. Irene M. Moroz | Sundarapandian Vaidyanatha

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