

# Robot for Hazardous Gas Detection and Alerting

Miss. Ghorpade Amruta R<sup>1</sup>, Miss.Deokate Priyanka M<sup>2</sup>, Miss Shitole Pooja B<sup>3</sup>, Mr.Kale Santosh D<sup>4</sup>

<sup>1,2,3,4</sup> S.V.P.M'S College of Engineering, Malegaon (Bk), Baramati

**Abstract-** In today's world safety plays major role in each and every field. It is important good safety system placed in working places and industries. In this project we implement the idea to design a robot which detects the hazardous gases. The main goal of this project is that to identify the gas and know the environment condition through the wireless camera and also transmit the data remote based station with the addition of one of two pair articulated tracks, they are to traverse on most terrain and overcome most obstacles.

LPG gas sensor is used to detect harmful gases such as methane. The hazardous gases like LPG and propane were sensed and displayed each and every second in the LCD display. If these gases exceed the normal level then an alarm is generated immediately and also an alert message is sent to the authorized person. So using this idea reduce the

**Keywords-** Robot, Sensor, ZigBee, wireless video camera etc.

## I. INTRODUCTION

The main idea of this project is that to measure the harmful gases in air by using robot. This robot detect the gases by using LPG gas sensor .If the level of gases are exceed than normal level then an alarm is generated immediately and also an alert message is sent to the authorized person. This alert message can be send by using ZigBee wireless technology and message can be display on monitor. Entire monitoring system divided into three major tasks, namely by receiving remote terminal data; second is to send data to a central Monitoring server; Third, when determining an emergency alarm information, via GSM module to send text messages to mobile phoned.

## II. SYSTEM BLOCK DIAGRAM

This project is divided into two Units:

### 1) Controller Unit:

Micro-Controller Unit is heart of this project because it controls the devices being interfaced and communicates with the devices according to the program. Sensors and camera motors are connected in that microcontroller. For the wireless connection ZigBee Technology is used. LPG sensors are used to detect the harmful gases and pass this information

to the microcontroller by using ZigBee. This information display on monitor.

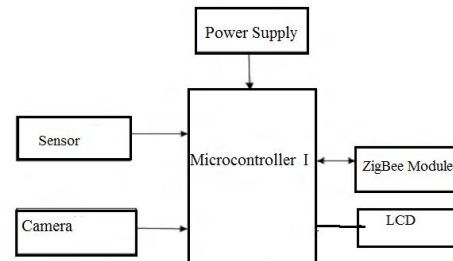


Figure 1. Controller Unit

### 2) Robot Unit

Robot unit is used in second part of project it shows the information which is send by the ZigBee Module. This information is display on a monitor or LCD . If the level of sensed value above the threshold values the it generate alert message to the user. This unit helps the user to give the guideline of root against the harmful gases path. This alert message display on the LCD Screen. This message is observe the robot then according to the status robot gives guideline to the user.

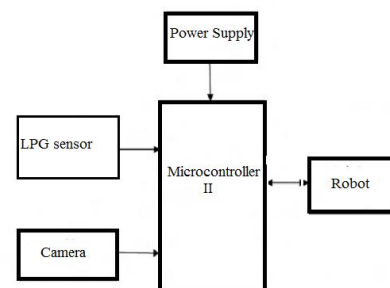


Figure 2.

## III. RELETED WORK

In this project we use the following Components

### a) LPG sensor:

There are different sensors are available in market to sense the harmful gases . In this project we use the LPG gas sensor.

This is the ideal sensor to detect the dangerous LPG leak in our home or in a service station, storage tank environment and even in vehicle which uses LPG gas as its fuel. LPG sensor has excellent sensitivity combined with a quick response time. When the target combustible gas exist, the sensors conductivity is higher along with the gas concentration rising.



Figure 3. LPG Sensor

#### b) Micro controller:

This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like ZigBee Module ,power supply ,sensor and camera so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written

#### c) ZigBee Module:

In this project sensor send the information by using wireless technology i. e ZigBee Module. ZigBee is a wireless technology which is defined by global standard .It is low coast wireless sensor networks. ZigBee is the set of IEEE 802.15.4 wireless protocol. The output of ZigBee modules used in this project is that Sending SMS by using GSM Technology..

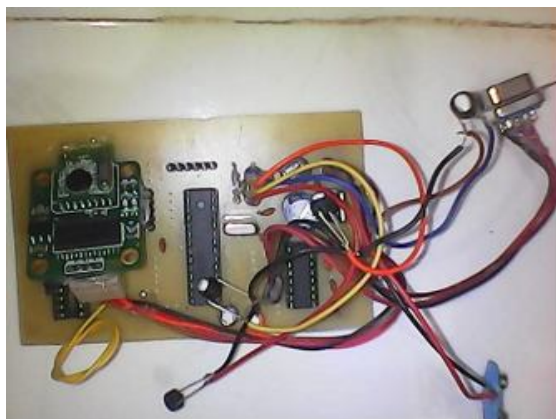


Figure 4. ZigBee Circuit

#### d) Power supply:

The power supply is used to convert high voltage AC mains electricity to a suitable low voltage supply for electronic circuits and other devices. This power supply can divided into a series of small blocks, each block performs a particular function. Analog to digital power supply which maintains the output voltage constant irrespective of A.C mains fluctuations or load variations is known as Regulated D.C Power Supply

#### e) Wireless Camera:

Wireless camera is used in this project to observe the live streaming of the environment. Wireless camera capture the image. This captured image pass to the monitor.

#### f) Robot Body Structure:

Today's world robotics is a developing field as it remove the manual work and as well as manual errors. Robotics technology high value in market because of its accuracy, precision and adaptability. Number of countries are trying hard to utilize the full benefit of this technology .In this project we are designing a data logging robot which will follow the command from the user. This robotobserve the all the information which is display on monitor and provide the guidance to the user.

### IV. FLOW CHART OF PROJECT

This is the flow chart of project. This project shows actual flow of process first we collect the data from sensors who sense the signal. Check the sensed value with threshold value, if sensed value is greater than threshold value then alert message generate this data passed by using ZigBee Module.

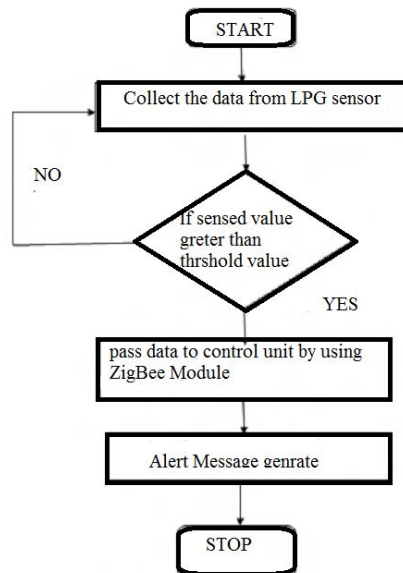


Figure 5. Flow diagram

## V. RESULTS AND DISCUSSIONS

This section shows the result of project. There are different views of this project are shown in above figure.

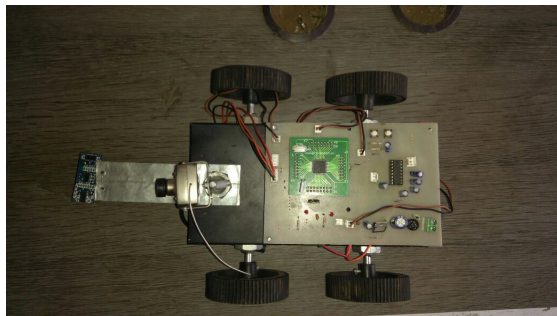


Figure 6.

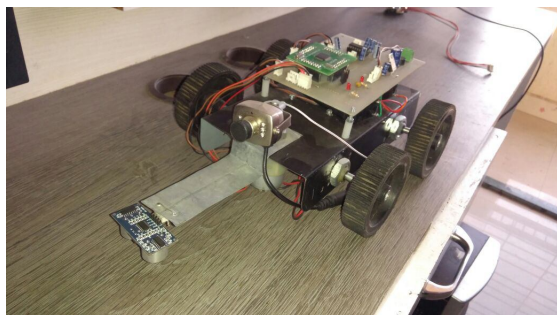


Figure 7.

## VI. CONCLUSION

This project is used to detect the hazardous gases by using robot. Robot detect the gases and display the alert

message on monitor when this gases cross the normal level. This application is used in many industries, coal mine and so on. It provides quick response rate and the diffusion of the critical situation can be made faster than the manual methods. We can design this project via wireless technology i.e. ZigBee Module.

## VII. FUTURE SCOPE

These proposed systems can be enhanced further. In future to make improvement of this system is that it not only detect the harmful gases also recover this problem.

## REFERENCES

- [1] Harmful gases wireless network monitoring system design using ZigBee, gsm technologiesv. Sri Vallavha1 Mr. K.manjunath
- [2] Embedded system for Hazardous Gas detection and Alerting V.Ramya, B. Palaniappan Assistant Professor, Department of CSE, Annamalai University, Chidambaram, India.
- [3] Design and implementation of wireless transceiver for data acquisition n wireless sensor network dr. R. K. Prasad , Mr. S. R. Madkar departmentof electronics bvedu, college of engineering, pune, india