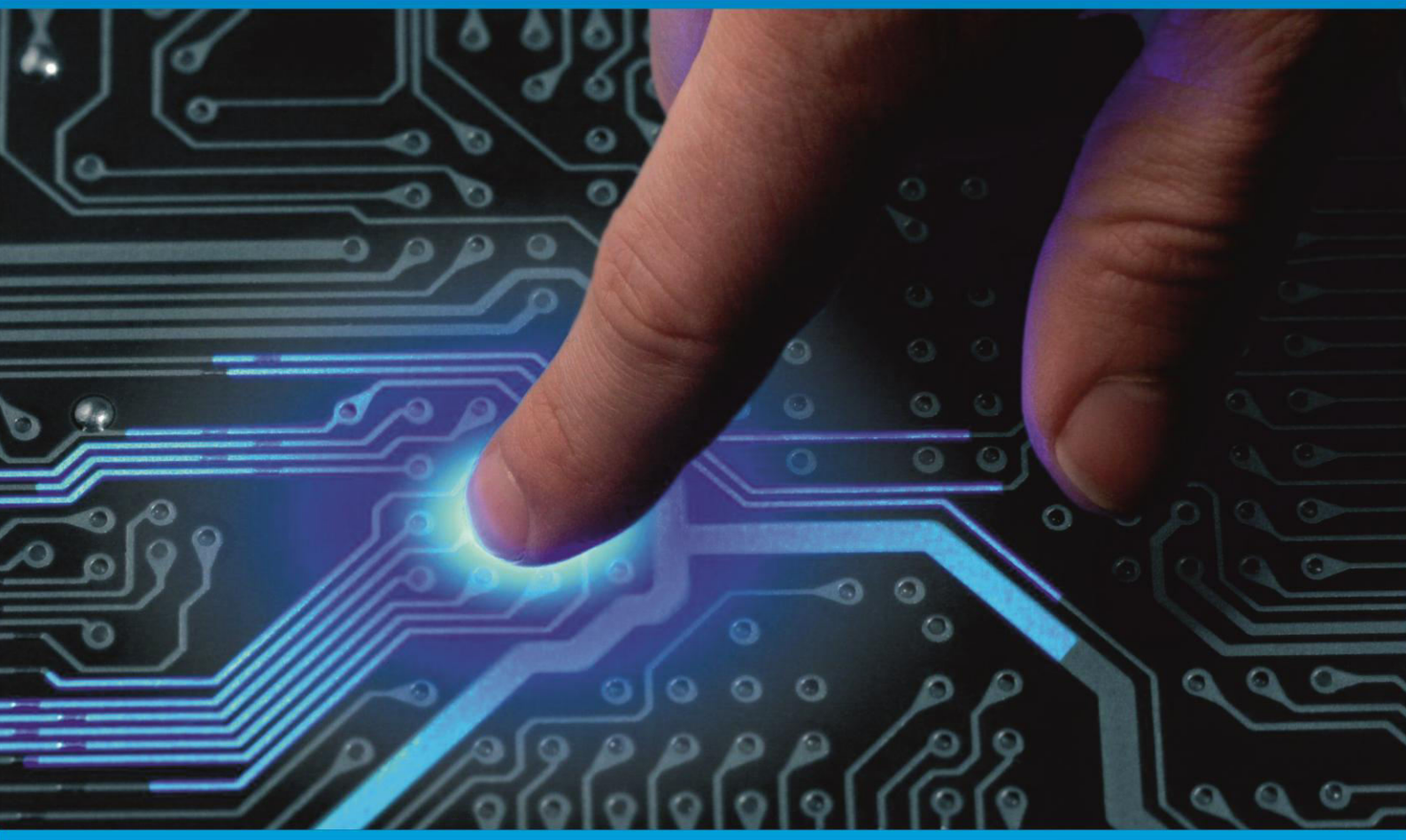
IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 5, May 2021

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.488

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 5, May 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0905098 |

Alerting and Detection of Methane and Carbon Monoxide in Industries using IOT

Barath kumar.K, Thirumurugan.K, Praveen.S.G, Dr.K.Chinnusamy,M.E,Ph.D.,

UG Student, Dept. of ECE., Velammal Institute of Technology, Tamilnadu, India.

Assistant Professor, Dept. of ECE., Velammal Institute of Technology, Tamilnadu, India

ABSTRACT: Industries disasters are the purpose for the increasing unreliability in human life particularly to the workers. Our project aims towards providing a safe environment for the health of workers in chemical, steel, petroleum Industries, etc. The major accidents cause due to leakage of hazardous gases used in production leads to the deaths and unsafe environment. To avoid such unpredictable incidents we had worked on a protocol system, the altering and detection of gases using IoT. “Prevention is better than cure” is a proverb but now a day a number of mines accidents and cleaning of solid waste accidents due to fast poison gases were increased. These accidents are occurred due do the poisonous and flammable gases like as CH4 (Methane), GAS sensor. These accidental problems are solves by quality maintenance of sensors with safety systems, control and advanced communication systems.

KEYWORDS: IOT,Nodemcu,Methanegas,Carbon Monoxide gas.

I. INTRODUCTION

Presence of high concentrations of harmful gases such as dust, smoke responsible for Air pollution. Inhaling like propane, methane, carbon monoxide, hydrogen these gases can increase the chances of health problem. In fact, dust when inhaled can cause breathing problems, damage lung tissue, and boost up existing health problems. Humans are responsible for almost all of the increases in greenhouse gases. Therefore, every government has stringent regulations which require prevention and reduction of emission levels. In our project, the major air pollutants like C3H8, CH4, CO and H2 is monitored using sensors and values obtained are processed using Arduino. IP address is used to send the data's and can be monitored from anywhere from logging into the IP address. Industries accident are the purpose for the increasing unreliability in the human life particularly to the workers. To decrease these industries accident, we developed a gadget that might recognize the poisonous gas and other physical condition utilizing the Internet of things (IoT). This project planned to avoid industries accident and continuously monitoring presence of gas. A central Raspberry Pi is joined with sensors like temperature, gas sensor. Sensors would be used to get the information of presence of gas from the environment at the leakage time. A buzzer is used to generate a sound signal alert by industries to the nearby area living humans..

II. RELATED WORK

A gas detector is a device that detects the presence of gases in an area, often as part of a safety system. A gas detector can sound an alarm to operators in the area where the leak is occurring, giving them the opportunity to leave. This type of device is important because there are many gases that can be harmful to organic life, such as humans or animals. Gas detectors can be used to detect combustible, flammable and toxic gases, and oxygen depletion. This type of device is used widely in industry and can be found in locations, such as on oil rigs, to monitor manufacture processes and emerging technologies such as photovoltaic. They may be used in firefighting. Gas leak detection is the process of identifying potentially hazardous gas leaks by sensors. Additionally a visual identification can be done using a thermal camera These sensors usually employ an audible alarm to alert people when a dangerous gas has been detected. Exposure to toxic gases can also occur in operations such as painting, fumigation, fuel filling, construction, excavation of contaminated soils, landfill operations, entering confined spaces, etc. Common 13 sensors include combustible gas sensors, photoionization detectors, infrared point sensors, ultrasonic sensors, electrochemical gas sensors, and metal-oxidesemiconductor sensors (MOS sensors). More recently, infrared imaging sensors have come into use. All of these sensors are used for a wide range of applications and can be found in industrial plants, refineries, pharmaceutical

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 5, May 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0905098 |

manufacturing, fumigation facilities, paper pulp mills, aircraft and shipbuilding facilities, hazmat operations, waste-water treatment facilities, vehicles, indoor air quality testing and homes.

III. PROPOSED SYSTEM

In industry safety is exponentially improved even during in extreme situations. Identify the unprecedented situation on the industry like Identify the poisonous gas is available by using sensors or sensors with drones. Secure the life of workers, labors and frontline workers who working in the industry. Secure the life of the working people. Establish additional communication link between sensors and ambulance, IoT or drone based communication system using Arduino. Identify the accurate Geographical area of the poison gas leakage. Continuous monitoring system with drone or multiple wireless sensor technology.

IV. STRING CODE

The Program memory features work much the same way as on a regular Arduino; placing read only data and strings in read only memory and freeing heap for your application. The important difference is that on the ESP8266 the literal strings are not pooled. This means that the same literal string defined inside a F("") and/or PSTR("") will take up space for each instance in the code. So you will need to manage the duplicate strings yourself. There is one additional helper macro to make it easier to pass const PROGMEM strings to methods that take a __FlashStringHelper called FPSTR(). The use of this will help make it easier to pool strings. Not pooling strings...

String response1; response1 += F("http:");
String response2; response2 += F("http:");
42 using FPSTR would become...

V. HARDWARE RESULTS

Digital IO Pin numbers in Arduino correspond directly to the ESP8266 GPIO pin numbers. pinMode, digitalRead, and digitalWrite functions work as usual, so to read GPIO2, call digitalRead(2). Digital pins 0—15 can be INPUT, OUTPUT, or INPUT_PULLUP. Pin 16 can be INPUT, OUTPUT or INPUT_PULLDOWN_16. At startup, pins are configured as INPUT. Pins may also serve other functions, like Serial, I2C, SPI. These functions are normally activated by the corresponding library. The diagram below shows pin mapping for the popular ESP-12 module.

Digital pins 6—11 are not shown on this diagram because they are used to connect flash memory chip on most modules. Trying to use these pins as IOs will likely cause the program to crash. Note that some boards and modules (ESP-12ED, NodeMCU 1.0) also break out pins 9 and 11. These may be used as IO if flash chip works in DIO mode (as opposed to QIO, which is the default one). Pin interrupts are supported through attachInterrupt, detachInterrupt functions. Interrupts may be 39 attached to any GPIO pin, except GPIO16. Standard Arduino interrupt types are supported: CHANGE, RISING, FALLING.

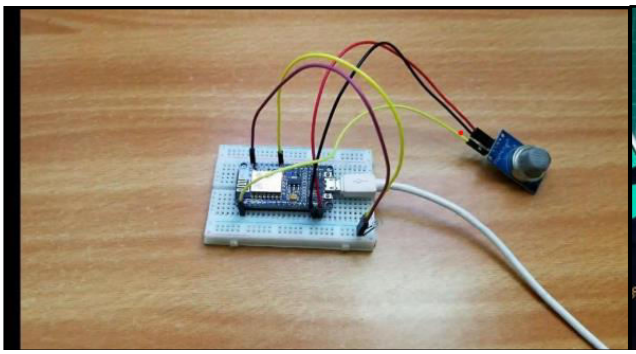


Fig.1.methane gas sensor by node mcu

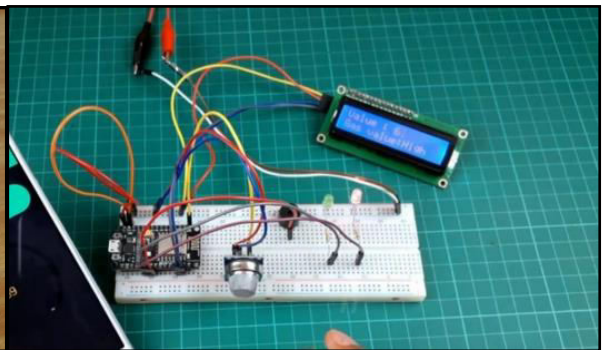


Fig.2.Carbon Monoxide gas sensor using Nodemcu

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 5, May 2021 ||

| DOI: 10.15680/IJIRCCE.2021.0905098 |

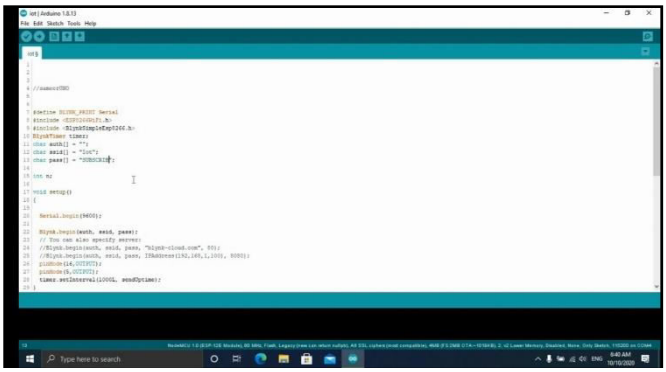


Fig.3.code of gas sensor.

VI. CONCLUSION AND FUTURE WORK

The industry safety is exponentially improved even during in extreme situations. Identify the unprecedented situation on the industry like Identify the poisonous gas is available by using sensors or sensors with drones. Secure the life of workers, labors and frontline workers who working in the industry. Secure the life of the working people. Establish additional communication link between sensors and ambulance, IoT or drone based communication system using Arduino. Identify the accurate Geographical area of the poison gas leakage. Continuous monitoring system with drone or multiple wireless sensor technology.

REFERENCES

[1]. Chang-Su Ryu "IoT-based Intelligent for Fire Emergency Response Systems "International Journal of Smart Home" Vol. 9, No. 3 (2015).
[2]. Guohong Li, Wenjing Zhang, Yi Zhang "A Design of the IOT Gateway for Agricultural Greenhouse" Sensors & Transducers, Vol. 172, Issue 6, June 2014.
[3]. JinfengSuna "The intelligent crude oil anti-theft system based on IoT under different scenarios" 20th International Conference on Knowledge Based and Intelligent Information and Engineering Systems, KES2016, 5-7 September 2016, York, United Kingdom.
[4]. JebahJayKumar, AbishlinBlessy" Secure Smart Environment Using IOT based on RFID" International Journal of Computer Science and Information Technologies, Vol. 5 (2) 2014 2493-2496.
[5]. Kumar.A" Application of Gas Monitoring Sensors in Underground Coal Mines and Hazardous Areas "International Journal of Computer Technology and Electronics Engineering (IJCTEE) Volume 3, Issue 3, June 2013.
[6]. Suresh Kumar "Integration of Wireless Sensor Network with Virtual instrumentation in a Hazardous Environmental" Vol. 2, Issue 4, April 2014.
[7]. Thangalakshmi "Poisonous Gas Detector with Electrochemical Nose" Second National Conference On Recent Advancements In Electrical And Electronics Engineering.
[8]. Vishwajeet "A Survey on the Smart Homes using Internet of Things (IOT)"International journal of Advance Research in computer science and management studies .volume 2, Issue 12, December 2014. 55
[9]. UNEP. United Nations Environment Program. Environmental threats to children. In: Children in the new millennium. United Nations Environment Program, United Nations Children's Fund and World Health Organization, Geneva, pp. 43-86, 2002.
[10]. World Health Statistics, World Health Organization, Geneva,2014.
[11]. R. Raghavan, John Singh. K, Thippa Reddy G, Sudheer K and Venkatesh P and Stephen OlatundeOlabiyisi, A Case Study: Home Environment Monitoring System using Internet of Things , International Journal of Mechanical Engineering and Technology 8(11), 2017, pp. 173 – 180 .
[12]. P. Dayaker, Y. Madan Reddy and M Bhargav Kumar, A Survey on Applications and Security Issues of Internet of Things (IoT), International Journal of Mechanical Engineering and Technology , 8(6), 2017, pp. 641– 648.
[13]. Kaleel Ahmed A and Prof. Dr. C.B. Senthil Kumar, Correlating Internet of Things. International Journal of Management, 8 (2), 2017, pp. 68–76. [14]. Manan Mehta. ESP 8266: A Breakthrough in Wireless Sensor Networks and Internet of things. International Journal of Electronics and Communication Engineering & Technology, 6 (8), 2015,

INNO SPACE
SJIF Scientific Journal Impact Factor

Impact Factor:
7.488

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

निस्केयर
NISCAIR

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

9940 572 462 6381 907 438 ijircce@gmail.com

www.ijircce.com

Scan to save the contact details