Drainage Monitoring System using IOT

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Abstract

Safety plays a major role in today's world and it is necessary that good safety systems are to be implemented in places of education and work. This work modifies the existing safety model installed in industries and this system can also be used in homes, villages, cities and offices. Most of the drainage and unused wells are forming Drainage Monitoring. In this project fully explaining about the Drainage gas detection for that we using carbon monoxide sensor and methane sensor and the value of two Monitoring are displayed in IOT through Mobile phone. The main objective of this work is designing microcontroller based Drainage gas detecting, alerting system and gas purification.The hazardous Monitoring like , CO and Methane will be sensed and displayed each and every second in the LCD display then the DC Fan will get ON to exhaust the Drainage Gas. If these Monitoring exceed the normal level then an alarm is generated immediately and also an alert is sent to the authorized person through the IoT. The advantage of this automated detection and alerting system over the manual method is that it offers quick response time and accurate detection of an emergency and in turn leading faster diffusion of the critical situation using gas purification process convert a Drainage Monitoring into pure air. The garbage alerting system is used to control the air pollution. All the gas sensor values are continuously monitoring through the mobile application using wifi module. This system is very much useful to make a city smart as well as reduce the human death.

Keywords: Drainage monitoring system, Node MCU, Iot, wifi .

1. INTRODUCTION

These days harmful gases leakage is the main reason for industrial accidents and depths of workers in industries. Pollutants released by industries in to atmosphere is also a cause for the environmental pollution and such the reason greatly effects humans and animals health by minimizing the levels of oxygen and increasing the levels of harmful gases like ammonia, carbon monoxide, nitrogen trifluoride, sulfur hexafluoride etc,, .These gases are mainly the reason for increasing the no of pollutants in atmosphere. These environmental pollutants are mainly released by industries working with chemicals. Industries management only have a eye on profits and consider environmental safety as least priority which in turn affects the atmosphere and industrial workers health who are living in and around industries as the level of harmful gases are high around industrial areas compared to normal living places. As the population depends more on usage of oil, gas and coal for generating energy to meet the energy demand by increasing population the release of harmful pollutants increases day by day .it is observed that about a 1.1 billion of human population respiration is done through unhealthy air and recorded 7 million deaths occur globally .Industries started peoples or industries owner fully focus on the profit oriented. They do not focus on the workers, people safety and environment safety also. Generally industries are located in the outside cities. But some industries are located at the middle of the cities and village because of the transport reasons or for the availability of raw materials. Due to human error and machine failures etc gas leakage accidents occur often but ceases many workers in to death beds. Gas leakage and detection of gas leakages and harmful gases in and around industries and can be effectively handled by using sensors and automation using IoT . Here we developed a basic model for detection of harmful gases and measurement of harmful gases on a self-calibrated ppm scale and notifying the workers of industry by sms in case any gas leakage is occurred in any sector of the industry.

2. EXISTING SYSTEM

The existing drainage monitoring system is not automated.Therefore, when a jam occurs, it is difficult to determine the exact location of the jam,leakage of the gases.There is also no early fall warning. Therefore, it takes a long time to identify and eliminate the blockage. Became very uncomfortable. Deal with the situation where the pipeline is completely blocked. People have a big problem due to the failure of the drain pipe.

3. PROPOSED SYSTEM

Since most cities in India have underground drainage systems,the normal operation of the system is very important to keep the city clean, safe and healthy. If they do not maintain the drainage system, then clean water may be contaminated by drainage and infectious diseases may spread. Therefore, various types of work have been carried out to locate, maintain and control these underground systems. In addition, leaks and explosions are unavoidable aspects of water distribution system management and may represent a large amount of water loss in the distribution system. If the project is not discovered for a long time, it will represent the implementation and design function of using different methods to monitor and manage the underground drainage system.In this system, we use ultrasonic sensors, gas sensors, temperature sensors, tilt sensors and flow sensors[2],[3]. All these sensors are connected to Arduino UNO. Depending on the sensor parameters, warnings or messages will be sent to authorize personnel. Used to

detect waste water leakage. The gas sensor detects toxic gases leaking from underground pipelines. The sensor is used to determine whether the hatch cover is open. When any of the above sensors detects an abnormality, a message will be sent to authorize personnel indicating where the problem occurred. All these sensor values are updated on the website via the Wi-Fi module.

4. METHODOLOGY

The methodology is based on IoT, which helps in
monitoring the hazardous gases present in sewage.
Whenever the gas level crosses the threshold value, the sewage workers are alerted through a buzzer indicating whether it is safe for the worker to work or not through an app in the smartphone.

5. SYSTEM DESIGN

Hardware Design:
It includes Node MCU, connecting cables, relay circuit,LDR
1. Node MCU ESP8266
The ESP8266 itself is a self-contained WiFi networking solution offering as a bridge from existing micro controller to WiFi and is also capable of running self-contained applications. This module comes with a built in USB connector and a rich assortment of pin-outs. With a micro USB cable, you can connect Node MCU Dev kit to your laptop and flash it without any trouble, just like Arduino. It is also immediately breadboard friendly.

Fig1. ESP8266

2. Gas Sensor
Gas sensors (also known as gas detectors) are electronic devices that detect and identify different types of gasses. They are commonly used to detect toxic or explosive gasses and measure gas concentration. Gas sensors are employed in factories and manufacturing facilities to identify gas leaks, and to detect smoke and carbon monoxide in homes.

Fig2.Gas sensor

3. Ultrasonic Sensor
An ultrasonic sensor is an instrument that measures the distance to an object using ultrasonic sound waves. An ultrasonic sensor uses a transducer to send and receive ultrasonic pulses that relay back information about an object's proximity. High-frequency sound waves reflect from boundaries to produce distinct echo patterns.
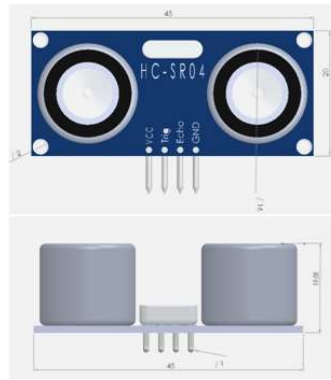
Fig3. Ultrasonic sensor

As shown above the HC-SR04 Ultrasonic (US) sensor is a 4 pin module, whose pin names are Vcc, Trigger, Echo and Ground respectively. This sensor is a very popular sensor used in many applications where measuring distance or sensing objects are required. The module has two eyes like projects in the front which forms the Ultrasonic transmitter and Receiver. The sensor works with the simple high school formula that

Distance = Speed × Time

4. LDR

The **Light Dependent Resistor** (**LDR**) is just another special type of Resistor and hence has no polarity. Meaning they can be connected in any direction. They are breadboard friendly and can be easily used on a perfect board also. The symbol for LDR is just as similar to Resistor but adds to inward arrows .The arrows indicate the light signals.

5.GPS Module

The **NEO-6MV2** is a **GPS** (Global Positioning System) module and is used for navigation. The module simply checks its location on earth and provides output data which is longitude and latitude of its position.It is from a family of stand-alone GPS receivers featuring the high performance u-blox 6 positioning engine. These flexible and cost effective receivers offer numerous connectivity options in a miniature (16 x 12.2 x 2.4 mm) package. The compact architecture, power and memory options make **NEO-6 modules** ideal for **battery operated mobile devices** with very strict cost and space constraints. Its Innovative design gives **NEO-6MV2** excellent navigation performance even in the most challenging environments.
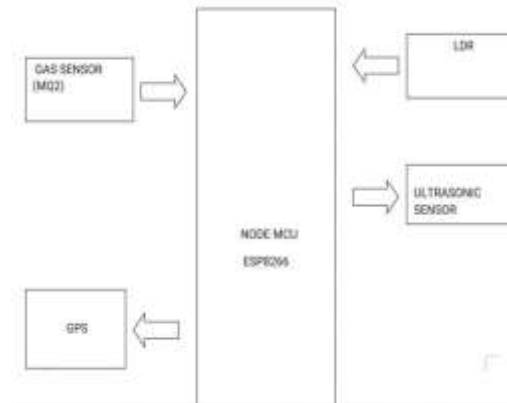

Fig4.GPS Module

6. BLOCK DIAGRAM

Fig5.block diagram

7.SOFTWARE DESCRIPTION

Arduino IDE IDE stands for "Integrated Development Environment" :it is an official software introduced by Arduino.cc, that is mainly used for editing, compiling and uploading the code in the Arduino Device. Almost all Arduino modules are compatible with this software that is an open source and is readily available to install and start compiling the code on the go. In this article, we will introduce the Software, how we can install it, and make it ready for developing applications using Arduino modules.

8.CONCLUSION

In this work a clever framework for Drainage gas and radiation discovery checking cautioning has been created to defeat the drawback looked in more

established techniques by utilizing Wi-Fi module and web of things. When LDR,Gas sensor ,Ultrasonic sensor is connected to the Node MCU ESP8266 , The node MCU ESP8266 receive messages with the help of IOT and GPS module where buzzer indicates the blockage .Consequently the utilization of serial correspondence makes the framework with Arduino controller and IoT. The IoT door associate remote sensor connects with the web, guarantee the operation of the gas and alcohol observing framework. It utilized just constrained sensor. If the Gas is detected in Sensors means then the GPS will get ON to exhaust the Gas. Created application additionally utilized for checking gas and radiation in android portable.

9. ACKNOWLEDGEMENT

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