International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 06 | June - 2021 ISSN: 2582-3930

SEWAGE MONITORING AND CONTROLLING USING IOT

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Abstract - At present time, disasters are basic in sewage because of the unpredictability of its regular habitat. Such regular debacles bring tremendous loss of ownership and life. To overcome these issues a safety helmet is proposed having a control framework worked inside the cap. The safety helmet for sewage workers is a venture attempted to expand the rate of security among excavators. The thought is acquired subsequent to realizing that the expanding number of lethal mishaps in sewage throughout the years. Controller is utilized for controlling every one of the operations. Our framework comprises a wellbeing safety system and control room which is connected through IOT beneficiary. Wellbeing our system sense the different encompassing conditions around worker and report it to the control room so that prompt measures can be taken to guarantee the security of the workers. Here we monitor the co2, methane, hydrogen sulphide using at mega 328p with help of IOT module to communicate the above parameter wirelessly and also here we add automatic buffering system which help to dilute the harm full gas at instantly.

***Key Words*: IOT 1, Co2 2, Methane 3, Controller 4, WSN 5** etc.

1. INTRODUCTION

Drainage is the system or process by which water, sewage or other liquids are drained from a place. In order to maintain the proper function of drainage, it should be monitored regularly. It is also difficult to monitor all the area of drainage because of physical limitation of human being. The irregular monitoring results in clogging the drainage that forms the silt which triggers flooding in the neighborhood. Sensor node consists of controller, memory, transceiver and battery to supply the power to the sensor node. Size of the sensor node depends on its application. In military application is microscopic small, its cost depends upon its processing speed, memory and battery. The node collects information from the surrounding areas and this sensed data is exchanged with a base station.

1.1 Proposed System

In an urban area, drainage has an important role in avoiding the danger of floods. Many researchers have investigated the drainage system which is related to drainage design as found in the study, while research about management of drainage has not been much discussed. In these studies, emphasize was on control simulation of the sewerage system for monitoring sensors and instrumentation drainage conditions. While research related to the implementation of a wireless sensor network in the management of the drainage system has not been done. The proposed work focuses on to design wireless sensor network based underground drainage monitoring system.

2. WORKING PRINCIPE

A reliable method of measurement for gas quantity is found in a gas sensor based on taguchi principle. This gas sensor is essentially heated element inside a porous semi conductive tube. The tube has a large surface and is able to freely absorb gas modules on the semiconductor surface. Electron transfer occurs between the gas molecules and the already absorbed oxygen molecules. This causes a relatively large increase in conductivity for a small change in gas concentration. This change occurs quite quickly.

Standard work condition

Parameter name	Technical condition	Remarks
Circuit voltage	5V±0.1	AC OR DC
Heating voltage	5V±0.1	ACOR DC
Load resistance	can adjust	
Heater resistance	33Ω±5%	Room Tem
Heating consumption	less than 800mw	

Environment condition

Parameter name	Technical condition	Remarks
Using Tem	-20℃-50℃	
Storage Tem	-20℃-70℃	
Related humidity	less than 95%Rh	
Oxygen concentration	21%(standard condition)Oxygen concentration can affect sensitivity	minimum value is over 2%

Sensitivity characteristic

Parameter name	Technical parameter	Remarks
Sensing Resistance	3KΩ-30KΩ (1000ppm iso-butane)	Detecting concentration scope: 200ppm-5000ppm LPG and propane 300ppm-5000ppm butane 5000ppm-20000ppm methane 300ppm-5000ppm H_2 100ppm-2000ppm Alcohol
Concentration Slope rate	≤0.6	
Temp: 20℃±2℃ Humidity: 65%±5%	Vc:5V±0.1 Vh: 5V±0.1	
Over 24 hour		

Table -1: Specification table

The main reason to use WSN for continuous monitoring of environment where human cannot reach to records the readings. WSN systems have a higher level of efficiency than wire line network system in terms of cost, flexibility and reliability. This paper will discuss the design of drainage systems to monitor conditions by using wireless sensor network. Some node sensors are deployed in the drainage manhole and will transmit the data about the condition of drainage to the cloud (base station) and municipal mobile. The parameters will be monitored through water levels in drainage, humidity and temperature of drainage manhole. It

will also check the conditions whether drainage manhole is open or closed to avoid accident due to an open manhole.

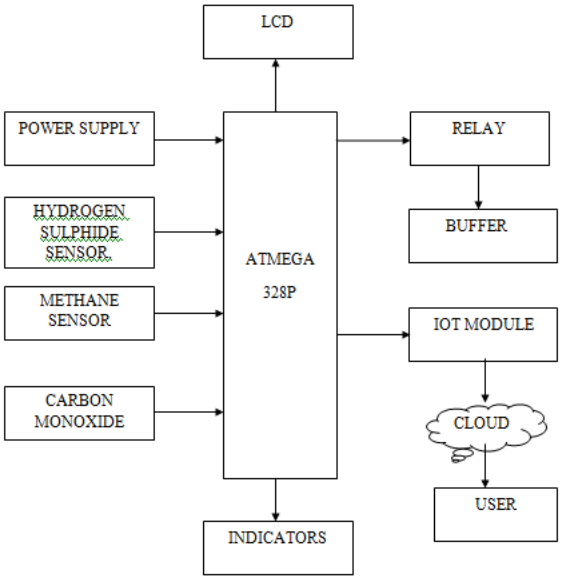

Chart -1: Block diagram of proposed system

Fig -1: Gas Sensor module

Product description:
Sensitive material of MQ-5 gas sensor is SnO2, which with lower conductivity in clean air. When the target combustible gas exists.

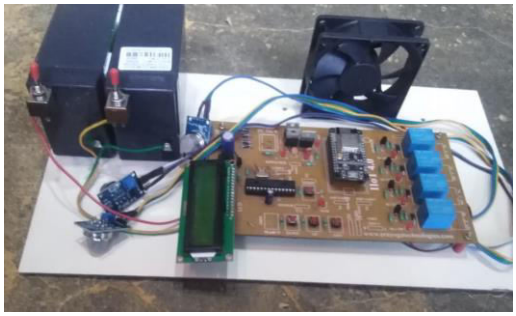

Fig-2: Proposed system of Sewage Monitoring

Manual monitoring is also inefficient. It required dedicated team which is only able to maintain the limited record with less accuracy. These weaknesses lead to the slow handling of problems in drainage. It also has collapsed because of too much rain. These problems can be mitigated with the help of Wireless Sensor Networks (WSN) and it is monitoring technology which consists of low power sensor nodes.

Application

- Mining sectors
- Space research centers
- Also for risk rescue operations to prevent the hostages

Connection Diagram

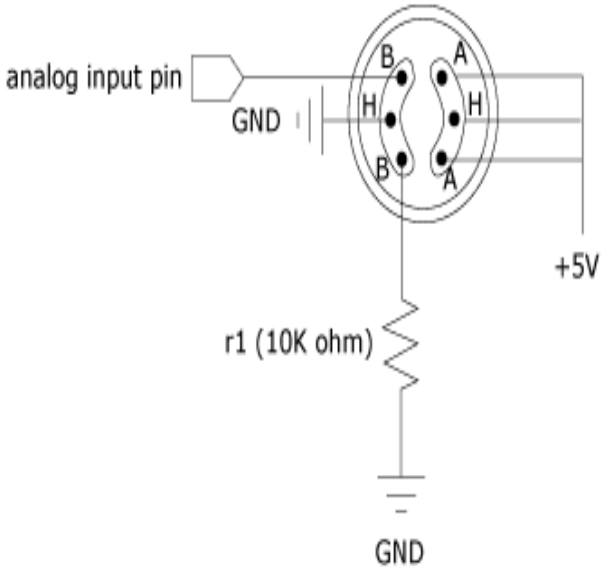

Fig -2: Connection diagram

Gas detectors measure and indicate the concentration of certain gases in an air via different technologies. Typically employed to prevent toxic exposure and fire, gas detectors are often battery operated devices used for safety purposes. They are manufactured as portable or stationary (fixed) units and work by signifying high levels of gases through a series of audible or visible indicators, such as alarms, lights or a combination of signals. While many of the older, standard gas detector units were originally fabricated to detect one gas, modern multifunctional or multi-gas devices are capable of detecting several gases at once. Some detectors may be utilized as individual units to monitor small workspace areas, or units can be combined or linked together to create a protection system.

Relay Applications

- Relays are used to realize logic functions. They play a very important role in providing safety critical logic.

- Relays are used to provide time delay functions. They are used to time the delay open and delay close of contacts.
- Relays are used to control high voltage circuits with the help of low voltage signals. Similarly they are used to control high current circuits with the help of low current signals.
- They are also used as protective relays. By this function all the faults during transmission and reception can be detected and isolated.

3. CONCLUSIONS

Wireless sensor networks using Arduino meet our objectives of the project with less cost, long range, and increases the network lifetime. However, Sensor networks are considered as the key enablers for the different application like u agriculture monitoring and controlling, Industry monitoring, home automation etc. By small modification in the algorithm, this project can be used in agriculture, crop and environment monitoring and controlling system.

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