International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 10 Issue: 03 | Mar 2023 www.irjet.net p-ISSN: 2395-0072

SMART INDUSTRY MONITORING AND CONROLLING SYSTEM USING IOT

S.Sathish [1], M.Soma sudhan[2], G.Rahul[3], K.L.Ramanan[4]

[1]Ug Students , Department of Electronics and Communication Engineering
Assistant Professor S.V.Lakshmi
[2] SNS College of Technology

Abstract:- Given the alarming rate of security lapses brought on by unauthorised entry and fire outbreaks in residential and commercial environments, particularly when property users are not present, along with recent technological advancements, it is increasingly important to implement remote safety monitoring systems to significantly reduce safety hazards. The safety monitoring system we describe in this paper can be used to remotely monitor residential and commercial properties to look for unauthorised entry points and unusual environmental conditions. The system is equipped with a built-in SMS alert subsystem to warn of security breaches, a liquid crystal display (LCD)-based on-site display function, and a web-based graphing and display function to give real-time status updates of sensed data. Two tests were conducted on the system: the first evaluated the basic functionality of the sensors comprising the sensing section in active mode, and the second assessed the dependability of the transmitting section by measuring the time required for SMS delivery and information update on the web server. Although the system has shown to be practical and successful, its dependability functions still need to be improved to account for network distribution issues and poor service quality.

Keywords: Monitoring system,Web server Sensors and Safety hazards

1. Introduction

n the recent years wireless technology and IoT grasped the most industrial area especially automation and control has increasing for need of upholding various sectors.

Healthcare has prime importance in our day to day life. This paper reviewed about new industrialization with ESP8266 and arduino UNO. Indoor Air Quality (IAQ) is highly worsens industrial environments, which then spreads from indoor to outdoor, creating a large scale effect around the industrial areas. Long term and short term effects caused by Air pollution causes the people to concern about the air they breathe. The effect of air pollution from industry is monitored scarcely. Our aim is to monitor the air pollution from the heavy industry which leads to undesirable effects on the health of human beings and also affects the environment. Pollution level in comparison to the ambient air quality standards can be done by using monitoring. To protect the people against extreme air pollution. Robust monitoring systems are necessary to alert people and initiate actions.

In the recent years wireless technology and IoT grasped the most industrial area especially automation and control has increasing for need of upholding various sectors.

Healthcare has prime importance in our day to day life. This paper reviewed about new industrialization with ESP8266 and arduino UNO. Indoor Air Quality (IAQ) is highly worsens industrial environments, which then spreads from indoor to outdoor, creating a large scale effect around the industrial areas. Long term and short term effects caused by Air pollution causes the people to concern about the air they breathe. The effect of air pollution from industry is monitored scarcely. Our aim is to monitor the air pollution from the heavy industry which leads to undesirable effects on the health of human beings and also affects the environment. Pollution level in comparison to the ambient air quality standards can be done by using monitoring. To protect the people against extreme air pollution. Robust monitoring systems are necessary to alert people and initiate actions.

The safety of people and their property is a fundamental concern for everyone. Home and workplace safety are now of the utmost importance as a result of the society's constantly rising rate of break-ins and fire breakouts. Technology improvements allow for the efficient deployment of safety monitoring systems in both the home and the workplace to significantly reduce safety risks. Numerous solutions are available on the internet for rapid communication over long distances. The inter-networking of "things" such devices and objects integrated with electronics, software, sensors, actuators, and network connectivity, which enable the gathering and exchange of data, is the subject of a new, developing technology known

as the internet of things (IOT). Given how quickly wireless and digital vision technologies have been incorporated into daily life over the past ten years, it is not surprising that ideas about safe and comfortable living environments and uniform working conditions in sectors have undergone significant change. Wireless connections allow sensor-based residential and industrial safety systems to operate in real time and alert users to potential security and safety hazards.

2. Review of Related Literature

In order to monitor pollution, Kavithaetal. (2019) advocates on employing intelligent sensors. The ability to track air pollution from anywhere in the world is made feasible by the sensors' collected data being uploaded to the Google cloud. Alerting is utilised when air pollution levels are in danger. This is used in industries and to reduce vehicle emissions' pollution. Rajalakshmi, R, and others (2019), observes the air's harmful gases to guarantee the security of those who are in it and makes the data accessible for monitoring anywhere in the globe. Sensors are used to keep track of the chemical composition of the air, including levels of combustible gases, LPG, methane, and carbon monoxide. Data from the cloud server is then portrayed visually to help with statistics. Fire and gas detection systems are used by Rupali et al. (2018) to maintain industrial and domestic safety. This system uses a sensor circuit to detect gas and fire leaks. The microcontroller, in turn, is controlled by the sensing circuit, which in turn activates the alarm system to warn of the gas and fire leak. SMS notifications are provided to users using GSM modems. Additionally, it is built with a mechanism to use a water sprinkler to spray water in the event of a fire or gas leak. MQ-6 and MQ-9 were employed as gas sensors to find the leak. Fire detection is done utilising an IR flame sensor, which finds the fire and sends the user an SMS alert. To study the dangerous gas detection and warning system, Manish Verma et al. (2018) employ a microcontroller-based system. The amounts of dangerous gases like LPG and propane are presented on an LCD screen every second. Email notifications and alarm generating mechanisms are used to notify the authorised individual. This automatic detection and warning system aids in finding a solution to the issue as quickly as feasible. This work by Angelica Nieto Lee and colleagues (2018) focuses on integrating all the contextual data to deliver correct and pertinent information as needed. Existing system data, such as 3D models and manuals, that has not been included into the monitoring system. In order to raise living standards, Aishwarya et al. (2018) advocated on the automation of numerous tiny chores around us utilising the Internet of Things (IoT).

3. Proposed System

Four separate sensors make up the detecting section: a PIR motion sensor, a DHT11 digital temperature and humidity sensor, a MQ-2 smoke sensor, and a MQ-5 gas sensor. These specialist modules are in charge of identifying and measuring particular environmental changes, then transmitting the measured data to the microcontroller for additional processing. The LCD display's main purpose is to show the system's current condition. As the system carries out monitoring tasks, it displays a variety of notifications, including alarms for gas leaks, smoke, temperature, and intruder detection, as well as any actions made by the microcontroller. A buzzer is used to execute the alarm portion. The buzzer uses a quick electric make-and-break mechanism that generates fast vibration to produce signals. A resonating chamber around the electronics amplifies the vibration, yet the enclosure is not impacted or contacted by the vibrating components. Every time the microcontroller detects an abnormality in the physical circumstances of the surroundings, the buzzer is programmed to sound in accordance with the program's instructions.

4. Result and Discussion

We will test our prototype under the following conditions. Sample findings for the gas and PIR sensors from a test to evaluate the fundamental functionality of the sensors making up the sensing unit in active mode are shown . The picture capture for the web application, SMS alert subsystem, and LCD status update is also displayed.

Climate at the time of data collecting and the existence of communication masts for certain networks are among the factors taken into account while choosing the sites.

The test was carried out by inserting SIM cards from several networks into the GSM/GPRS module and timing how long it took for an SMS to be sent. The time count began as soon as the sensors picked up any anomaly in the environment, and it continued until the alarm appeared on the phone at the specified number in the programme code and the webpage was updated with the new information.

5. Conclusion

A safety system based on IoT technology that can detect temperature, smoke, liquefied gas leaks, and entry has been designed for usage in both homes and businesses. The system also incorporates the ability to dynamically update a webserver's database at predetermined intervals for the display of sensed data and graphing functions, as well as to notify an authorised user or industry personnel of abnormal environmental conditions and unlawful intrusions into private or public property in any location.

We have successfully given the system the ability to receive feedback from an authorised user by using the GSM/GPRS module. This work is still being improved upon, and we intend to properly investigate and implement feedback mechanisms so that an authorised user may send text messages back to the system to effect exact control of equipment deployed in the house or industry to eliminate inherent risks.

From the test results obtained, the functionality and effectiveness of the system has been proved. Therefore, more effort has to be done to increase system resilience so that it can handle network distribution issues and poor service quality. In the meantime, for optimal results, we strongly advise using the SIM card from the most dependable mobile network in any given location in the GSM/GPRS module.

6. Future Scope

The industrial site may use this prototype to help find gas leaks and monitor numerous parameters, which speeds up problem-solving and improves control system proficiency. In order to maintain a secure operation and avoid significant health issues brought on by gas leaks as well as industrial safety dangers, this technology may be used to monitor the natural gas distribution system as well as industrial, commercial, and residential monitoring systems. The recommended approach can assist manufacturers enhance their standards by providing frequent maintenance by acting as an autonomous industrial monitoring system.

7. References

[1] Kavitha.B.C, Vallikannu.R . IoT based intelligent industry monitoring system. International Conference of Signal Processing and Integrated Networks, 2019

[2] Rajalakshmi.R, Vidhya.J .Toxic environment monitoring using sensors based on IoT.

International Journal of Recent Technology and Engineering, 2019.

[3] Rupali, S.Gajare, P.Mahajan .Home and industrial safety system for fire and gas leakage detection. International Research Journal of Engineering and Technology, 2018.

[4] PathRastogi ,DikshaTripathi .Gas leakage detection and prevention kit provision with IoT.International Research Journal of Engineering and Technology, 2018.

[5] IshwaryaGawali, V.Nayakwadi, PriyankaRajmanes .Gas leakage detection and smart alerting system using IoT. International Journal of Innovative Research in Science, 2018.

[6] V.Goulao, R Paulo, J Salvado, G Martins, A Granjeia, A new monitoring and data logger system for industrial cooling equipment application, Institute Of Electrical And Electronics Engineers , 2017.

[7] Mohammed Y Aalsalem, NasrullahArmi .Intelligent oil and gas well monitoring system based on IoT .Institute Of Electrical And Electronics Engineers. 2017.

[8] KanappanA,Hariprasad.K ,Toxic gas and radiation detection monitoring using IoT, International Journal of Engineering Resesarch and Technology, 2017.

[9] Fabien Charaim, Yusuf BugraErol, Kris Pister. Wireless gas leakage detection and localization Institute Of Electrical And Electronics Engineers, 2016.

[10] KanZheng, Shaohang Zhao, Zhe Yang, Xiongxiong ,Design and implementation of LPWA-based air quality monitoring system, Institute Of Electrical and Electronics Engineers, 2016.

[11] NavreentinderKaur, Rita Mahajan, Deepak Bagai, Air quality monitoring system based on Arduino microcontroller , International Journal of Innovative Research in Science, Engineering and Technology, 2016.