IOT BASED COAL MINE SAFETY MONITORING AND ALERTING SYSTEM

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- **Abstract -** Safety is the most vital part of any type of industry. In the mining industry safety and security is a fundamental aspect of all. To avoid any types of accidents mining industry follows some basic precautions. Still accidents take place in underground mines due to rise in temperature, increased water level, and methane gas leakage. Here we provide safety to worker. When worker in danger he can press panic switch inform security. To enhance safety in underground mines, a reliable communication system must be established between workers in underground mines and fixed ground mine system. The communication network must not be interrupted at any moment and at any condition. Some workers are not aware for safety and they are not wear helmet. A Limit switch was then used to successfully determine whether a miner has removed his helmet or not. This system also provides an early warning, which will be helpful to all miners present inside the mine to save their life before any casualty occurs. The system uses IOT module for transmission of data. There is alert switch at transmitter side for emergency purpose.

- **Index Terms** – AURDINO UNO, LED Display, IOT WI-FI MODULE, GAS SENSOR, DHTH SENSOR, BUZZER (ALARAM).

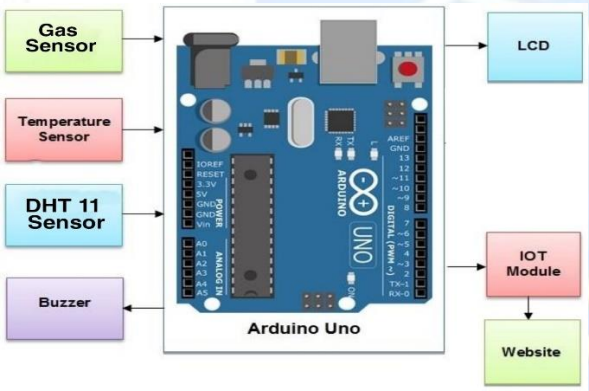
1.INTRODUCTION

The Internet of Things (IoT) is nothing more than machines that communicate with each other via the Internet. On a large scale, IoT applications vary. The European Research Cluster on the Internet of Things classifies key IoT technologies as major areas such as smart buildings, smart transport, smart power, smart business, smart health and smart environment. IoT is a trend-setting technology which stores all sensor data in the cloud where it is easily accessible from the web. This technology also involves sensors and actuators for data collection and internet distribution. We use cloud not only to store data, but also to analyze, capture and visualize data. Such an emerging technology can be used to make existing systems more efficient in various IoT applications such as agriculture, health, smart home, etc. Coal is a non sustainable origin that cannot be widely replaced by humans, there are several mishaps of coalmines occurring in the mines, and the diggers are putting their lives at risky, by working in the coal mines, even once in a while they end up losing their lives in the coal mines that are an unfortunate part.

Mainly such mishaps happen as a direct result of the old equipment and wired devices, resulting in the end, mishandling, spillage of the noxious gases in the coal mines, pose tremendous hazards to the excavators inside the coal mines.

2.LITERATURE SURVEY

The paper proposes an early reprimand procedure for the risk of sand plug subject to twofold logarithmic twist. Directly off the bat, the coupled time region examination and GRNN figuring are used to predict the oil weight and bundling pressure parameters in the twofold logarithmic curve slant sand plug chance caution .What's more, a while later the inclination change is applied to perceive and condemn the sand plug, which can comprehend the early reprimand of sand fitting of breaking. Finally, in order to improve the precision of twist slant tally, the improved AP gathering computation is used to divide the oil weight and weight twist followed by twist fitting, at the same time figure the inclination of the fitted curve. The essential duties of the paper are according to the accompanying. The ID and transmitting module perceives the distinction in gas center using an extraordinary distinguishing circuit worked thus. This module checks if analteration in gathering of gas (es) has outperformed a certain pre-chosen edge. In case the sensor recognizes an alteration in gas center, it impels and differing media alert and gives a sign to the authority module. The authority module goes about as a flexible alert device to allow the convey ability inside the house premises. The system was had a go at using LPG and the alert was impelled as a result of progress in center To be productive, security best practices in any affiliation must be significantly pervaded into the corporate culture and maintained from top organization on down through the positions. Prosperity is actually everybody's movement. This is especially huge in mining and other high-chance endeavors where prosperity care and consistency are essential in helping with thwarting disasters, wounds and fatalities. Mine chiefs and individual diggers need to hold quick cautiously to operational prosperity strategies. Directors need to give the right contraptions and getting ready to every agent to guarantee the life, prosperity and security of the workforce, similarly as to guarantee significant worksites and assets. As driving mining affiliations certainly know, making a secured working environment infers a dynamically useful and productive mining movement.



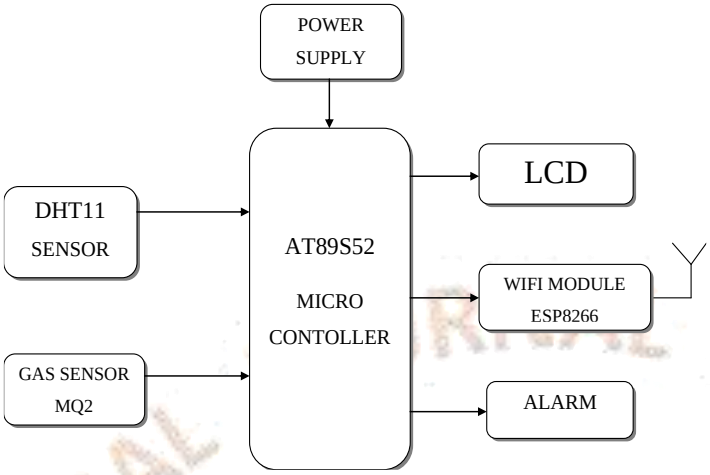
3.EXISTING SYSTEM

- In existing method, there is no data transmission from mine section to monitoring station for monitoring the status of mine workers and the atmosphere.
- There are no immediate security measures available at the time of emergency.

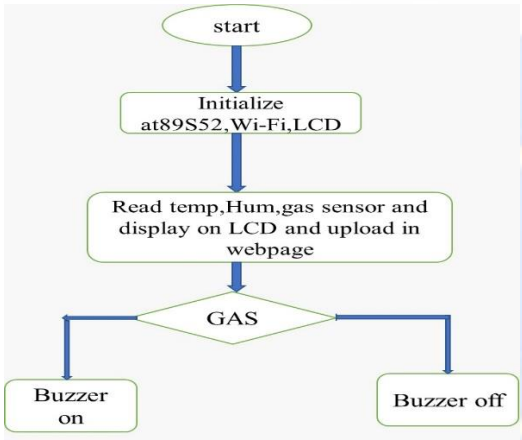
4.PROPOSED SYSTEM

- In this proposed system we mainly have controlling and monitoring systems.
- The coal mine safety systems are fixed with gas sensor modules, temperature sensor and relays.
- All the sensors are integrated to the controller.
- Gas sensors detects the gas in the mines and will notify to the workers if the level of gas is above the normal level.
- These sensor values are continuously uploaded to the cloud for analysis and also for further use.
- The temperature values are also monitored inside the coalmine and send data control unit through INTERNET

5.SYSTEM ARCHITECTURE



BLOCK DIAGRAM



FLOW CHART DIAGRAM

6.RESULT ANALYSIS

- If there are any changes in temperature and humidity levels, directly the data will be displayed in the LCD shows the values of both temperature and humidity.
- Here we are using DHT11 sensor for measuring change in both temperature and humidity levels
- If there are any release in gases the gas sensor senses it and it displays in the LCD i.e. detected
- When ever there is increase in temperature and humidity levels it sends the data to the microcontroller and it is given to LCD for displaying the data.
- Simultaneously, the buzzer alarm will blown automatically when the gas is detected and alerts the workers in coal mine system.

7.CONCLUSION

In today's life safety is the major challenge for all the mining workers. The mining safety system ensures the hazard free working environment. The main purpose of the project is to reduce the mining accident and improve the working conditions. To increase the productivity and reduce the cost of mining along with consideration of the safety of workers, an innovative approach is required. Coal mine safety monitoring system based on wireless sensor network can timely and accurately reflect dynamic situation of staff in the underground regions to ground computer system and mobile unit.

8.REFERENCES

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