# COAL MINE MONITORING USING IOT

# Abstract:

# Mines are the most dangerous place to work because in the mines, explosion often happens and thousand people are dying. And a recent report states that in such mine accidents an average of around 12,000 people have died. This plan will be useful to them in remote locations during the crisis. In this paper given an overview of IoT based coal mining safety for workers using IoT and ESP32 Microcontroller. Apart from this, it consists of CH4 Gas sensor, Temperature and Humidity sensor which are used to monitor the underground hazards. An electrochemical gas sensor system for health and safety monitoring in coal mines. The system incorporates a mine temperature and humidity sensor, an electrochemical sensor readout board, and a commercial low power microcontroller board. Electrochemical sensor is utilized to significantly decrease power, cost and size. In underground coalmine major of accidents occurred are based on natural gas and overheating of surroundings. We mainly focused on the hazards monitoring, all the sensor values compared with the threshold values with safety limits and if any hazards detected, and the ground station will be given the necessary alert with help of online web server using IoT via WIFI Module.

**BLOCK DIAGRAM:**

**SENSOR NODE**

**LCD**

**WIFI**

**MICROCONTROLLER**

**TEMPERATURE & HUMDITY SENSOR**

**BUZZER**

**MQ4 GAS SENSOR**

**POWER SUPPLY**

**ONLINE MONITORING:**

**WEB APPLICATION FOR COAL MINE MONITORING**

**HARDWARE REQUIREMENTS:**

* ESP32
* SENSORS: DHT11 SENSOR

MQ4 GAS SENSOR

* WIFI MODULE
* LCD
* POWER SUPPLY

**SOFTWARE & LANGUAGE REQUIREMENTS:**

* ARDUINO IDE
* EMBEDDED C
* PHP
* HTML
* MYSQL