

# IOT BASED COAL MINE SAFETY MONITORING AND ALERTING SYSTEM

## AIM:

Design and development of IOT based coal mine safety monitoring and alerting system using Arduino.

## PURPOSE:

Coal mines are very important and generate money for good economic growth for any country. There is lot of manual work in coal mines in daily operations. Lot of accidents happens in coal mines in various ways. Mainly in underground excavation lot of CO gases generate and cause health hazardous. Sometimes high temperature causes heavy fires.

## DESCRIPTION:

This project includes WIFI (Esp8266/IOT module) which is connected to Arduino through UART interface. LM35 (Temperature Sensor) and CO (Mq2) sensors are connected to Arduino through Analog and Digital IO pins. Buzzer connected to digital IO pin.

## WORKING:

Lm35 (Temperature) sensor reads Coal mine temperature. Heavy heat causes fires. Mq2 (CO) sensor reads CO emission in Coal mines. These sensors data will be displayed on LCD continuously. In abnormal condition gives buzzer sound to alert coal mine workers. WIFI (ESP8266/IOT) module sends sensor data to server continuously. User can see data in IOT server from anywhere. Before entering into coal mines workers has to observe data in IOT server and then leave.

## TECHNICAL SPECIFICATIONS:

### HARDWARE:

Microcontroller	:	Arduino Uno
Crystal	:	16 MHz
LCD	:	16X2 LCD
WIFI	:	Esp8266 (IOT module)
Temperature Sensor	:	LM35
CO Sensor	:	MQ2
Buzzer	:	5v DC
Power Source	:	12v 2 amp Adaptor

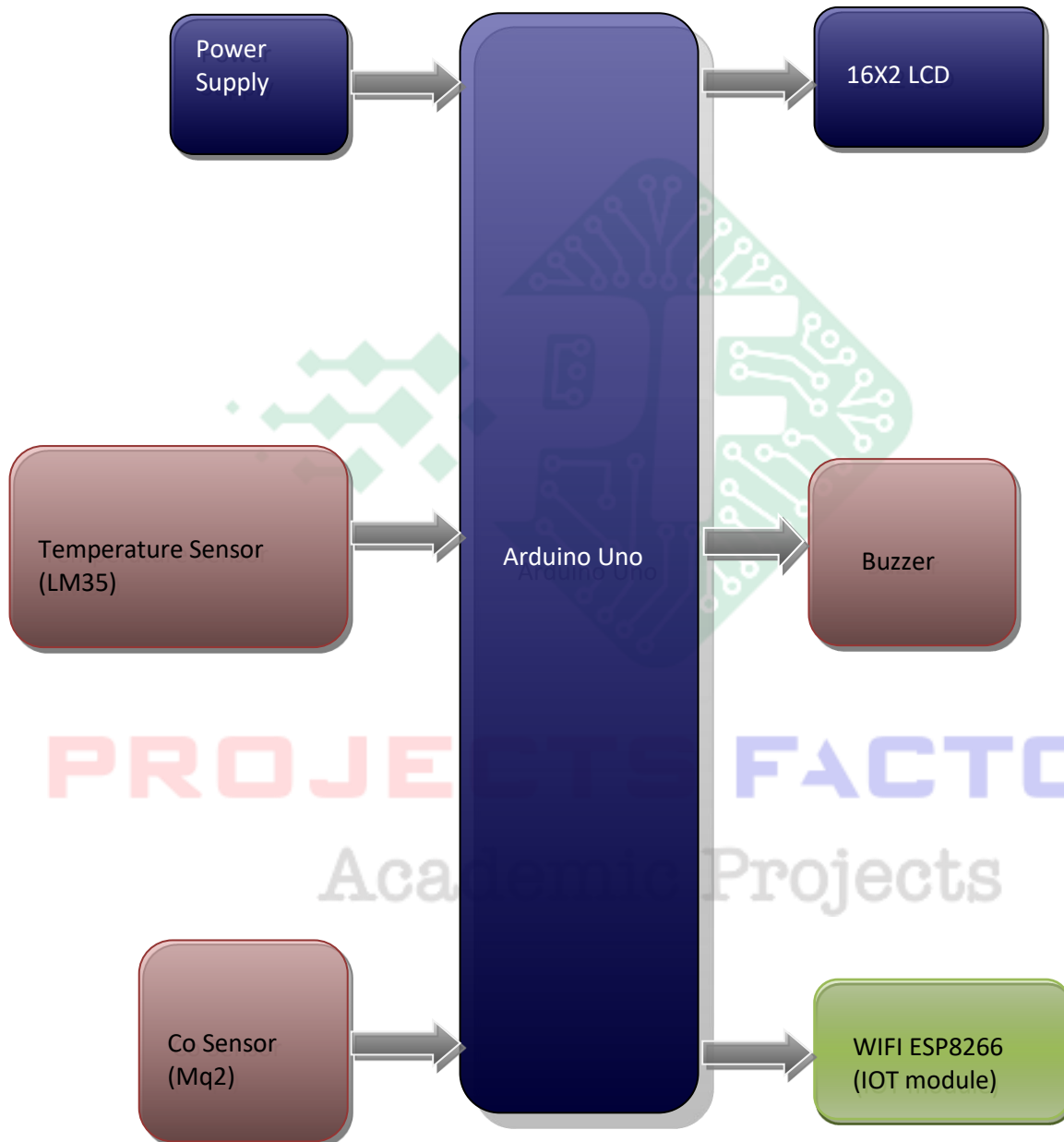
### SOFTWARE:

Arduino IDE  
Proteus based circuit diagram

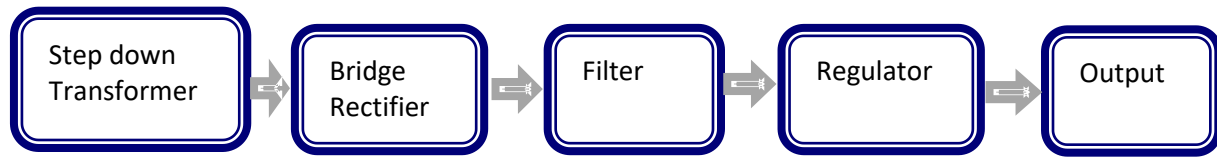
### APPLICATIONS:

- Coal Mines
- Underground excavation

**BLOCK DIAGRAM:**



## POWER SUPPLY BLOCKDIAGRAM:



## INTERFACES COVERED:

- We have covered WIFI (ESP8266/IOT) module interfacing
- LM35 (Temperature Sensor) and CO (MQ2 Sensor) Sensor interfacing.



**PROJECTS FACTORY**  
Academic Projects