

## ZIGBEE BASED INDUSTRIAL SECURITY SYSTEM

### **AIM:**

Design and development of Zigbee based industrial security system.

### **PURPOSE:**

Industrial security is very important for any kind of industries. Especially oil based industries are very dangerous if we ignore any small faults. We have to monitor specific parameters each time without negligence. Here we are going to read temperature, Oil level, Valve failure and smoke parameters. These are primary level parameters of any industry. Here the project title is Zigbee based industrial security system.

### **DESCRIPTION:**

This project includes Zigbee module (HC12), which is connected to Arduino through UART interface. Temperature Sensor (LM35) connected to Arduino analog pin. Level sensor connected to Arduino digital pins. Smoke sensor (MQ135) connected to Arduino digital pin. IR sensor connected to Arduino digital pin and it can detect valve failure.

### **WORKING:**

In this project we are going to monitor industrial parameters through Zigbee. Here we have two Zigbee modules. One is located at sensors side and other at monitoring side. Monitoring module placed at PS or laptop side. Based on requirement sensors placed on respective places. Here temperature (LM35) sensor monitors industrial temperature, if temperature high then siren will be ON. Smoke (Mq135) activated then siren will be ON. Level sensor installed at oil tank and if any excess oil than desired range then also siren will be ON. IR sensor placed at valve and it can detect valve release. Generally pressure valves release when high pressure occurs. All this information displayed on 16X2 LCD and displayed at monitoring side. At monitoring side user can see data in serial port through software.

## TECHNICAL SPECIFICATIONS:

### HARDWARE:

Microcontroller	:	Arduino Uno
Crystal	:	16 MHz
LCD	:	16X2 LCD
Zigbee Module	:	HC12 - 433MHZ or 2.4Ghz
Buzzer	:	DC 5V
Temperature Sensor	:	LM35
Oil Level Sensor	:	3 level leaded type
Valve Sensor	:	IR sensor
Gas Sensor	:	MQ135
Relay	:	12v DC
Siren	:	5V/12V DC
Power Source	:	12v 2 amp Adaptor

### SOFTWARE:

Arduino IDE

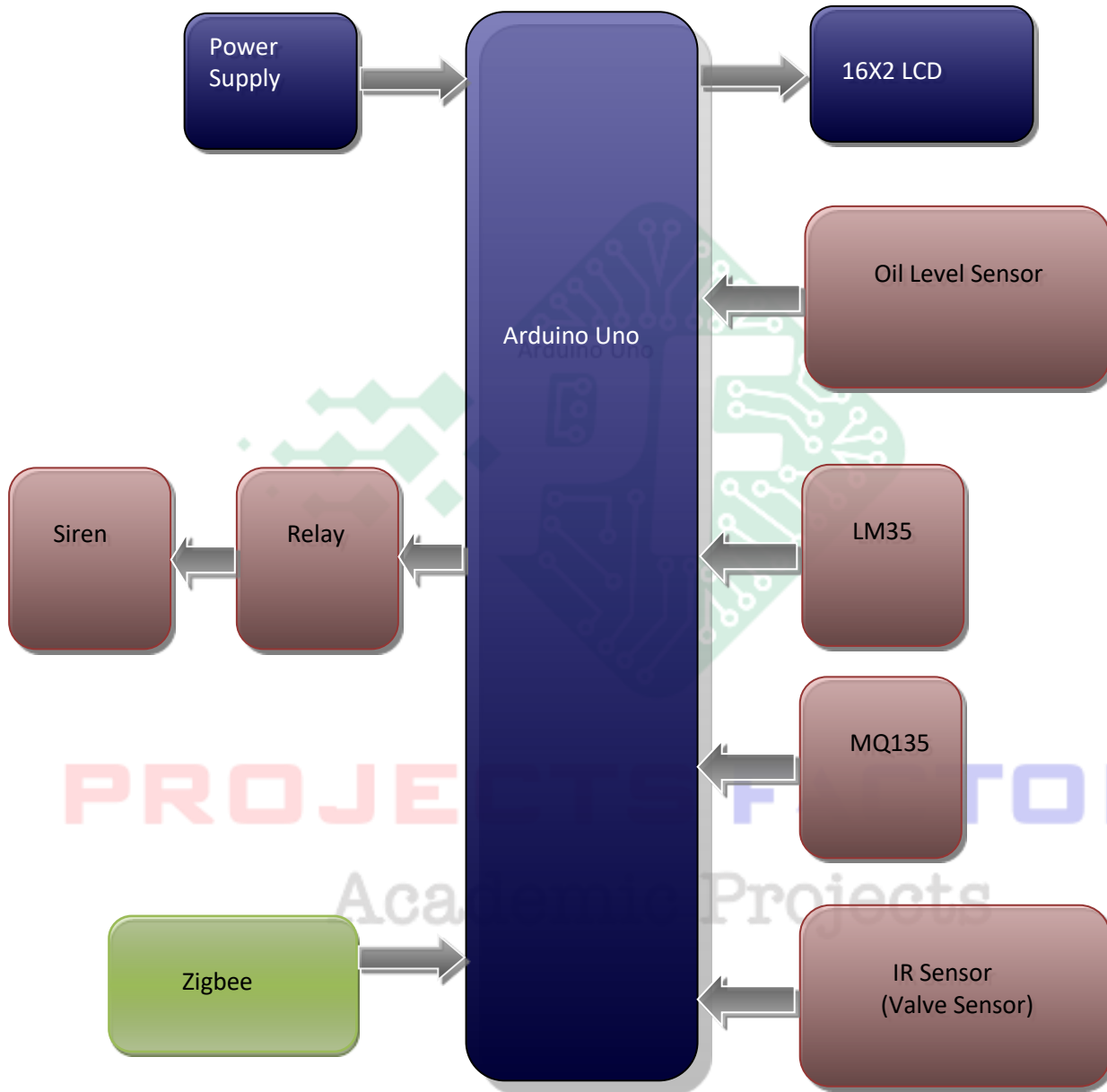
Proteus based circuit diagram

### APPLICATIONS:

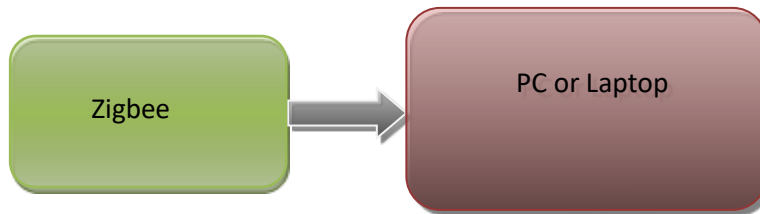
- Industrial Security System
- Home security
- Oil Industries

## BLOCK DIAGRAM:

### Transmitter



## Receiver:



## POWER SUPPLY BLOCKDIAGRAM:



## INTERFACES COVERED:

- We have covered Zigbee (433Mhz – HC12 or 2.4Ghz) module interfacing
- LM35, Level Sensor, MQ135 and IR sensors interfacing

**PROJECTS FACTORY**  
Academic Projects