Environment monitoring system in industrial area and Safety of workers

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Environment monitoring system in industrial area and Safety of workers is system to monitor the pollution inside the factories and provide safety place for the workers and uses Wi-Fi to transfer the data to the control room. The main objective of the project is to monitor the pollution which comes from factories to protect the environment and workers inside factories are used to Measure the CO Content and getting a message through GSM the Value is transferred when it is more than the threshold. It also uses monitor the temperature and display on LCD, when the value more than the standard value by getting SMS on the GSM and Buzzer on. It also measures the PH level of the water and display the values on the LCD. These values of humidity is displayed on LCD. One of the specific function of this system is it by Count the number of workers who are entry or leaving from the factory. A wireless System is used to Transfer these data (temperature and IR) to remote monitoring station.
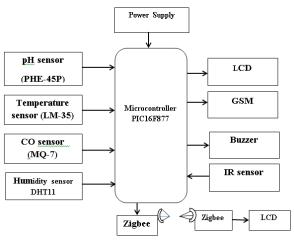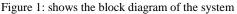
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Introduction

In this time world is suffering from pollution coming from the factors. The industrial pollution effects the natural environment, atmosphere and human. The project will provide a monitoring system for pollution in the industrial area. An example of industries which will use this project, chemical industries, making Paper industries, Treatment of Water industries and Manufacturing of Sugar. The main goals of the project is to monitoring the parameters which causing pollution and trying to reduce that effect to the environment and the staffs working in factories .The four parameters which will be monitoring by the project are pH sensor, CO sensor, Humidity sensor and temperature sensor. In addition, there are two IR sensors for counting the numbers of staffs are Entry and exit the factories. The system functions are if any of the parameters(CO, Temperature, pH, and Humidity) rising up more than standard known Who represents the seriousness, the system immediately will display the values by using LCD, or using Laptop connected by wireless using Zigbee system and using GSM which the system keeping sending the message for the changing in the parameters . Also the system provide feature for the workers, when the workers are inside the factory and any of the parameters (CO, Temperature, pH, and Humidity) rising up will start alarm by using Buzzer, the system also verifies that all workers outside the factory (work shop) when there is alarm by using the IR sensor.

Proposed Approach

The project proposed is contains of five sensors which are carbon monoxide sensor, temperature sensor, Humidity sensor, pH sensor and IR sensor. The changing in values from the sensors will display on the LCD. When the carbon sensor and temperature sensor rising up the SMS through the GSM. Also the system using the Wi Fi to transfer the information of the IR sensor and temperature sensor to the room control to be display through the laptop using Realterm program. The project consists of GSM, LCD, PH sensor, Co2 Sensor, Humidity sensor; Temperature Sensor, IR sensor, Buzzer, Zig Bee and Real time program.

The project is intended to Read the Parameters from the sensors inside the factory then will display the all values remotely by using the Zig bee then show values in the control room. The LCD is used to Display the status of the System regularly and for the workers to know the status of the current Reading of the Sensors in the location.

Figure 1: shows the block diagram of the system

The GSM is used when the CO or the Temperature rise more than the standard values will get SMS will show these rises and also the Buzzer will start alarm. The temperature Sensor is LM35 which is used to detect the Temperature in the factory and the values will show in the control room by using the Real time program. When the Temperature is rises more than the Threshold value (< 35) the Microcontroller will control based to programing and the GSM will send SMS and the Buzzer start alarm and will not stop until the temperature become less than 35. Using Carbon Monoxide sensor to detect the Carbon accumulation in the factory. The Carbon Monoxide sensor can detects the gas concentrations from 20- 2000 ppm.

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When the gas reached the 2000 ppm which may causes harmful to the workers, then the microcontroller will control based to programing and the GSM send SMS and the buzzer start alarm and will not stop until the gas become less than the 2000ppm.The PH sensor (PHE-45P) detects the acidity and basicity in the Industrial environment. The Values will display on the LCD. The ranges which the pH sensor can measure are 0 to 14.00 ph. The standard range for pure water between the 6 to 7 when the values reached above or below the buzzer will start alarm. Using Humidity sensor to detect the humidity inside the factory. The normal reading for the humidity around 40% to 50% which not affect the workers and the hardware. The sensor connected to microcontroller and reading updating on the LCD. Also using IR sensors for counting the workers entry and exit the factory to make and the reading will sending by the Signee to control room to make sure about the number of workers inside the factory and who are outside when there is alarm in factory.
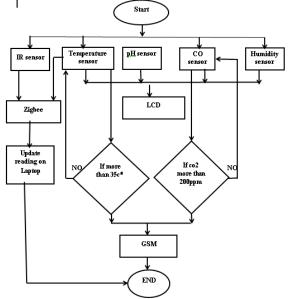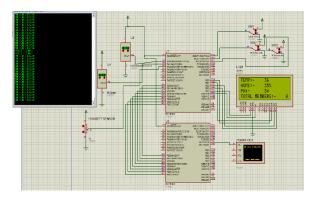

Figure 2: Flow chart of the process

Figure 3: Schematic view in ISIS proteus

The system includes three different sensors that measure important variables such as PH, conductivity and temperature, as we know these variable have a major effect on the fish's health. Moreover, there are also four different actuators to maintain the water condition in the kit such as cooling or heating
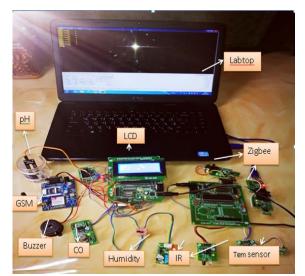

Figure 4: Real time system of Industrial monitoring system

the water to maintain proper water temperature also there is a feeding fish system and water pump for changing water. The system also includes a web application that stores all the gathered data to be stored as well in the user personal phone or device.

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