'INDUSTRIAL PARAMETER MONITORING FOR POLLUTION CONTROL'

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ABSTRACT :- Pollution is the major problem that live organisms are facing on the earth. Industries are the major source of water and air pollution particularly in developing countries. It is great challenge to reduce the pollution level i.e. to monitor the pollutants from the industries like Textile, Petro-chemical, Paper making and sugar industries that affects the environment and human health.

The main objective of our project is to monitor the parameters which affects the environmental stability & to take continuous watch on industries. Our project methodology is to make a system that monitor the pollution parameter & report to the pollution control authority when particular industry exceeds their factors beyond precise limit. For this we use wireless monitoring technique. This technique uses Wi-Fi & MQTT dashboard for monitoring.

Proposed methodology uses different sensors like pH, temperature, CO, SO2 & humidity. The technique major the pH level of industrial waste water, temperature of the machinery ,level of CO & SO2 during particular processes. Our technique uses Wi-fi as communication medium, with the help of this signals can be successfully conducted to server. So that correct & fruitful actions can be made easily.

Finally throughout our project we try to monitor the pollutant parameter for the control of pollution & the data can be send online with wireless system. The proposed system is more flexible and gives correct results for monitoring parameters. Wi-fi is suitable for wireless communication for transferring signals to the server.

Keywords: Pollution, pH, CO, SO2 , MQTT dashboard, Wi-Fi

INTRODUCTION

Now a days there are so many problem related to pollution .Pollution is the biggest problem which live organisms are facing on the earth. Pollution is the harmful material i.e. unwanted material, residual added into the environment. Pollution is of different types like air pollution, water pollution, noise pollution and soil pollution. These are greatly affects on humans life as well as environment. Industrialization is the main source of pollution, because of that nature being disturbed. Textile industry is one of the major source of air pollution particularly in developing countries. There are many processes performed in textile industry like bleaching, printing, dying, cleaning. The pollutant present in textile waste water are color, BOD,COD, dissolved solids, refactrory materials. Air pollutants from textile industries are SPM ,SO2 gas, Nitrogen oxides etc. Air pollution caused when smoke, dust and any harmful gases entered into atmosphere, which is harmful to the living organisms. Air pollution causes global warming, acid rains, respiratory problems and heart problems. In this project work, study analysis is about water and air pollution. We are going to monitor various parameters that affects environmental stability. For analysis purpose we use online monitoring system. This system has many advantages like it require less time. The conventional monitoring system take much time for monitoring. There are chances of corruption in conventional system so we preferred online monitoring system. Its our social duty to take action against pollution ,that means from our side we have to take some action against pollution control.

LITERATURE REVIEW

Pravin J, Deepak Sankar A, Angeline Vijula D.(2013) have proposed the Industrial pollution monitoring system using LabVIEW and GSM. In this paper GSM is used as wireless communication, pH, Temperature and CO level can be measured and send to the pollution control board by the use of GSM. LabVIEW is used for monitoring purpose.[1]

Umesh M. Lanjewar, J.J. Shah(2012), have proposed the air pollution monitoring and tracking system using mobile sensors and analysis of data using data mining technique. In this paper air pollution monitoring and analysis is done by the association rule data mining technique. For this Apriori algorithm of association rule data mining is used. In air pollution CO, NO2 and SO2 sensors are used for collecting data.[2]

Isha Gupta, Rashpinder Kaur(2013), have proposed the Design and Development of Industrial Pollution Control System using LabVIEW. In this paper humidity sensor, pH sensor, CO analyser, temperature sensor is used for industrial pollution control. For the controlling purpose microcontroller P89v51rd2 is used with GSM and LabVIEW. The data can be transferred through SMS.[3]

Anuradha B. Kandekar, Nikita A. Kala, Namrata P. Jain, Nikita V. Tatiya, Deepali P .Pawar(2016),have proposed the Monitoring and Controlling System for industrial pollution using IoT. In this paper IoT is used for monitoring. Gas sensor and temperature sensor collects the data from industries and give the arduino board and send to Laptop or smart hone monitor Redin.[4]

I.   EXISTING SYSTEM

**Fig:-Conventional/Offline Data Monitoring System**

It is conventional method and also called as offline method. In this method there is one committee will be form. And this committee will go to the field or industry for the inspection. For this methodology first the orders arises from the regional officers for the inspection of particular industry. Then control panel forms one committee for the inspection. After that this committee will go to mentioned plant or industry. They observe the working condition of that industry and analyze the pollution parameter. After that committee makes a report on industries working condition and that will be submitted to the pollution department board. Then the pollution department takes action according to report analysis. For this whole working lot of time take place. There is chance to get company alert between this period so this method is not much beneficial for pollution control.

II.   PROPOSED METHODOLOGY

The below figure shows the block diagram of proposed system. In this system various sensors like pH, humidity, temperature, CO,SO_2 and smoke sensors are interfaced to the controller. Data from controller is send to the sever via WiFi technology.
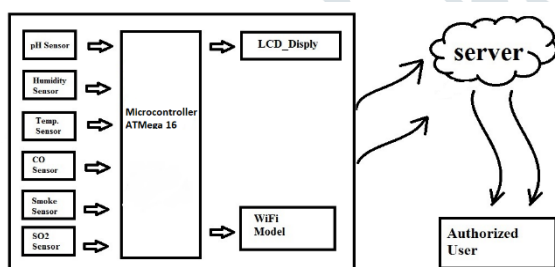
Fig:- Block diagram
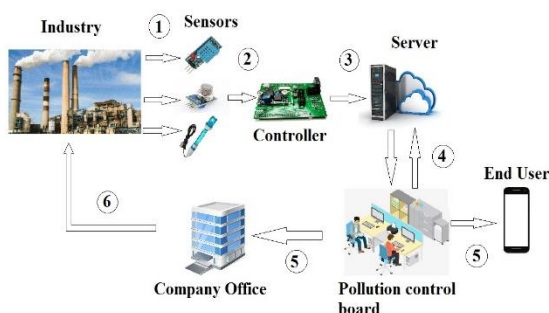

Fig:-Over view of proposed system.

Above fig. shows actual working of proposed system in that first we detect the pollutant quantities from industrial outlet with the help of sensors. pH sensor detect the pH level of water, humidity sensor sense the humidity level, temperature is sensed by LM35 and so on.

Whole system is divided into two units. First is the sensor unit that includes different sensors and microcontroller. Second unit is the server unit which include server and web also analysis of data. Sensors are interfaced to the microcontroller ATmega32 which is from AVR family. It is heart of whole system. If any fault occurred in this microcontroller then the working of system stop. The quantities that sensed are in the analog form that would not be understand by the controller so that uses inbuilt ADC. The measured quantities are displayed on the LCD display. 16*2 LCD display is used which is interfaced to the microcontroller. The data is transferred to the server through Wi-Fi model.

Authority person from the pollution control board will access the data from the server. When there is some miss function occurred during the industrial process to some particular industry. Then pollution control board will send notice to the head office of that respective company and the end user or company owner. After the notice collected from pollution control board then company will be correct the process to reduce the pollution. After that this process is repeated again and again. The main advantage of our system in that we can take continuous data from industries and also we control the pollution.

III.   IMPLEMENTATION AND PROTOTYPE OF PROPOSED SYSTEM.
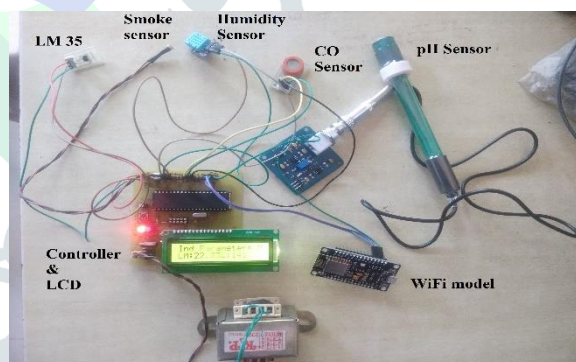
IV.   ADVANTAGES

1. Remote monitoring is possible from anywhere in the field.
2. Continuous surveillance is done through monitoring section.
3. Cost is less as compare to BOD and COD meters.
4. Data storage can be possible for future analysis.
5. Manual mistake can be reduced in this system.
6. Accuracy is high.

V.   APPLICATIONS

1. For irrigation to remotely control the soil moisture and pH level as well as the temperature.

2. In Petro chemical/Textile industry to check out the entire industrial environment by sitting away from site area.
3. Reduce manpower as to regular monitor the pollution temperature, humidity, pH level and CO gas as control will done through sensors.
4. In paper making industry to control the parameters which causes pollution and deteriorates the industrial and natural environment.

VI. CONCLUSION

This paper represent air and water pollution monitoring system. For this analysis work uses different sensors and Wifi module. Using this system authorized person can access data from anywhere by using wireless technology. Sensors are interfaced to controller to monitor the parameters and determine the levels of various gases like co, Sulphur and smoke intensity also values of temperature and detection of pH level and humidity. For the implementing this project we can able to control pollution level in industrial areas

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