

INDUSTRIAL WASTE GAS AND POLLUTION CONTROL SYSTEM

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Abstract:

Nowadays, Industries violate the environment and create the environmental issues like greenhouse effects and diseases which are harmful to human beings. To neutralize such unsteadiness in nature a pollution monitoring system is necessary in today's world. The main objective of our project is to design an efficient and robust system to control the parameters causing pollution and to minimize the effect of these parameters without affecting the plant or natural environment. This project proposes a system of monitoring and controlling pollution parameters like CO, SO₂, temperature and humidity caused by industrial emissions during the processing of Carbon monoxide and Sulphur dioxide. If industry unit's pollutants range above the industrial standards, then automatically the power gets terminated through the transformer and license has been cancelled by the Government. Several applications of pollution controlling systems are in industries. The control of the parameters which causes pollution of the natural environment and industrial pattern is a great experiment. This project is used to control the pollution and waste gas from the industry.

Introduction

Industrialization increases the degree of robotization and so it increases pollution by releasing adulterants into the atmosphere. There should be a system to cover and assess the artificial pollution. Specific attention is given to the factors which affects the health of living organisms and Ecosystem. Artificial pollution monitoring is the collection of information at different locales of diligence and at regular intervals of time in order to give the data which may be used to define current conditions. Due to the complexity of parameters large variations are set up between different diligence. The proposed system aims in erecting a robust system that can measure the artificial pollution and help to reduce it and to drop mortal hindrance in covering the artificial pollution and give a healthy terrain for the workers to work in.

1. Working Principle

In this project, we would like to present effective uses of Internet of Things to address the industrial pollution. Continuous monitoring of air quality is obligatory to ascertain level of pollution and presence of certain harmful pollutants. Various gas sensors may be pressed into service for this

purpose.

The above details are updated into online database. Before data are passed to the microcontroller, it must be converted in to the digital value. The ADC converts the output of the sensor's analog values to corresponding digital values.

Then microcontroller does the further processing. A system will detect the hazardous gases that are emitted by industries across the particular area. It simultaneously provides data to authority and organization. The main objective of the work is to design microcontroller based toxic gas detecting and alerting system. The hazardous gases like LPG, CO₂ and various gases relating to the corresponding industries were sensed and displayed each and every second on the LCD display. The temperature and humidity data will be displayed in the database and also in the mobile app for every 5 minutes. By clicking the Show Data button in the app, the numerical values will be displayed. The advantage of this automated detection and alerting system over the manual method is that it offers quick response and accurate detection of an emergency and in turn leading faster diffusion of the critical situation.

2. Block Diagram

In this project, we are using microcontroller, gas sensor, temperature sensor, level converter and GSM. Here, gas sensor is used to determine the gas level. Temperature sensor used to detect the change in temperature. If the polluted gas determined by gas sensor then this information is passed through the microcontroller to the exhaust fan. Exhaust fan is switched on automatically with the help of microcontroller. If the polluted gas can go beyond the limit . Then, SMS send to the tamilnadu pollution control board with the help of GSM .

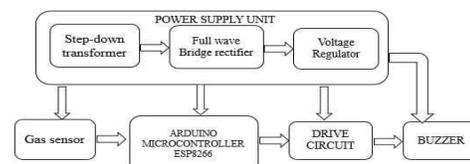


Fig.1:Block diagram

Gas sensor



Fig.2 Gas sensor

[5] discussed about Positioning Of a Vehicle in a Combined Indoor-Outdoor Scenario, The development in technology has given us all sophistications but equal amounts of threats too. This has brought us an urge to bring a complete security system that monitors an object continuously.

Arduino

The Arduino board, you can write programs and produce interface circuits to read switches and other detectors, and to control motors and lights with veritably little trouble. numerous of the filmland and delineations in this companion were taken from the attestation on the Arduino point, the place to turn if you need further information. [7] discussed about Nanorobots Control Activation For Stenosed Coronary Occlusion, this paper presents the study of nanorobots control activation for stenosed coronary occlusion, with the practical use of chemical and thermal gradients for biomedical problems. The recent developments on nanotechnology new materials allied with electronics device miniaturization may enable nanorobots for the next few years. New possibilities for medicine are expected with the development of nanorobots. There's a USB connector for talking to the host computer and a DC power jack for connecting an external 6-20 V power source, for illustration a 9 V battery, when running a program while not connected to the host computer. heads are handed for interfacing to the I/ O legs using 22 g solid line or title connectors.



Fig.3 Arduino microcontroller

Step down transformer

A step down motor will step down the voltage from the ac mains to the needed voltage position. The turn's rate of the motor is so acclimated similar as to gain the needed voltage value. The affair of the motor is given as an input to the therapy circuit.

Full wave Bridge Rectifier

Rectifier is an electronic circuit conforming of diodes which carries out the rectification process. Rectification is the process of converting an interspersing voltage or current into corresponding direct(dc) volume. The input to a therapy is ac whereas its affair is unidirectional palpitating dc. generally a full surge therapy or a ground therapy is used to amend both the half cycles of the ac force(full surge rectification). [3] discussed about a project, in this project an automatic meter reading system is designed using GSM Technology. The embedded micro controller is interfaced with the GSM Module. This setup is fitted in home. The energy meter is attached to the micro controller. This controller reads the data from the meter output and transfers that data to GSM Module through the serial port.

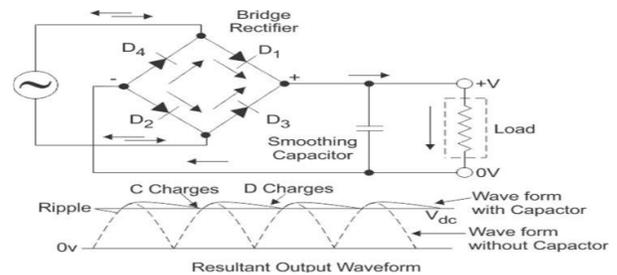


Fig 3 Full wave Bridge Rectifier

Voltage Regulator

A regulated power force is veritably important essential for several electronic bias due to the semiconductor material employed in them have a fixed rate of current as well as voltage. The device may get damaged if there's any divagation from the fixed rate. The AC power force gets converted into constant DC by this circuit. By the help of a voltage controller DC, limited affair will be fixed to a constant voltage

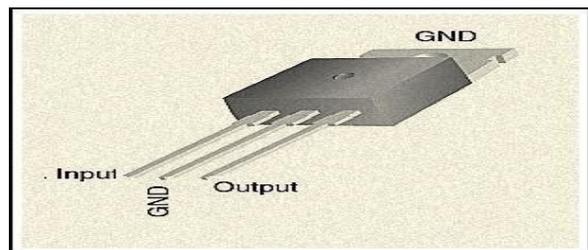


Fig 4 IC 7805 pin diagram

3 Conclusion

An IoT based temperature and humidity monitoring system for server room was designed, implemented and tested. It is quite useful as compared to manual monitoring and also it is reliable as it is not possible to monitor always the temperature and humidity rise manually. To check the temperature and humidity measurement and thus we can recover the system in less time and faults before any uncertain failures thus resulting in significant cost saving as well as improving system reliability. A perfect tradeoff between accuracy and cost is achieved by making use of single board minicomputer Microcontroller and appropriate sensors leading to a well-grounded system.

Datasheets available on the dashboard of IBM Blue mix account will help in framing good policies against the increasing level of pollution to ensure healthful environment. To detect harmful gases in particular area we have used different sensors to get values of pollutants in the air.

4 References

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