



INDUSTRIAL POLLUTION MONITORING AND CONTROLLING USING IOT

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Abstract: The majority applications of pollution monitoring systems are in industries. The control of the parameters which causes pollution and deteriorates the industrial and natural environment pattern is a great challenge and has received interest from industries especially in Paper making industries, Water treatment industries and Sugar manufacturing industries. 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. The proposed methodology is to model a system to read and monitor pollution parameters and to inform pollution control authorities when any of these factors goes higher than industry standards. A mechanism using IoT is introduced in this proposed methodology, which will automatically monitor when there is a disturbance affecting the system. The system investigates level of pH in industry effluents, level of CO₂ gas released during industry process and temperature of the machineries. The through this project we try to prove that control of pollution can be computed and the data can be transferred online. Our proposed method is more accurate to derive the desired parameter Similarly, the response to industrial impacts is also highly variable. The main reason for the assessment of the quality of the industrial environment has been, traditionally, the need to verify whether the observed industrial quality is suitable for intended uses. The use of monitoring has also evolved to determine trends in the quality of the water, air and soil environment and how they are affected by the release of contaminants, other anthropogenic activities, and/or by waste treatment operation (impact monitoring).

Keywords: Internet of Thing,

I. INTRODUCTION

The terms monitoring and assessment are frequently confused and used synonymously. The process of industrial quality assessment is an evaluation of the industrial quality in relation to standard quality set by pollution control board. Particular attention is given to factors which may affect human health and the health of the natural system itself. Environmental quality assessment includes the use of monitoring to define the condition of the water, to provide the basis for detecting trends and to provide the information enabling the establishment of cause effective relationships. Industrial quality monitoring is the collection of information at set locations of different industries and at regular intervals in order to provide the data which may be used to define current conditions, establish trends etc. Due to the complexity of factors determining industrial quality, large variations are found between different industries. More recently, monitoring has been undertaken to estimate nutrient or pollutant fluxes discharged to rivers, ground waters, lakes, oceans and soil or across international the boundaries. The assessment of background quality of the industrial environment is also now widely undertaken as it provides a means of comparison with impact monitoring. It is also used simply to check whether any unexpected change is occurring in otherwise pristine pollutants. However, it should be noted that industrial environmental quality is very variable depending on local conditions. Fresh water is a finite resource essential for use in agriculture, industry, propagation of wildlife & fisheries and for human existence. India is a riverine country. It has 14 major rivers, 44 medium rivers and 55 minor rivers besides numerous lakes, ponds and wells which are used as primary source of drinking water even without treatment. Most of the rivers being fed by monsoon rains, which are limited to only three months of the year, run dry 2 throughout the rest of the year often carrying wastewater discharges from industries or cities or towns endangering the quality of our scarce water resources. Similarly working environment in an industry is important for safety of its workers and people who live near to it. Hence it is important to monitor amount of temperature and carbon monoxide level in an industry.

II. PROPOSED SYSTEM

The proposed work, uses locally available gas sensor for observing the polluted gases like Carbon monoxide, Carbon dioxide and parameters like temperature, humidity and sound. The sensors data can be uploaded to the cloud and if any

of these exceeds a value then an email will be sent to the pollution board authority. Here we monitor the CO_2 , methane, hydrogen sulphide using Arduino with help of IoT module to communicate the above parameter wirelessly and also here we add automatic buffering system which help to dilute the harm full gas at instantly. The pollution authority can view the data from a remote location using an android app and he can also shut down the entire industry from a faraway location if need arises. The access to the data is secured with the help of encryption systems. A mobile application originally developed to make the proposed IoT system with features of anytime, anywhere. The device has been tested for reliability of the data and the platform has been implemented in a building to test its feasibility

III. WORKING PRINCIPLE

Existing devices used for pollution monitoring needed manual collection and processing of knowledge continuously from time which successively needs a group staff to continuously monitor and log the info. A model which has been created and it screens the changeability of boundary like Air, Noise, Temperature, Humidity and lightweight. Existing devices used for pollution monitoring needed manual monitoring of the device over continuously from time to time which successively needs a group of staff to continuously monitor the data and log into the information Manual systems put pressure on people to be correct altogether details of their work on all times, the matter being that people aren't perfect. With manual systems the extend of service depends on individuals and this puts a requirement on management to run training continuously for the workers to keep them motivated and to make sure they are following the right procedures. It is often too easy to accidentally switch details and find yourself with inconsistency in data entry or in hand written orders. Also, person responsible of knowledge logging may change the info as instructed by higher official's makes it unreliable.

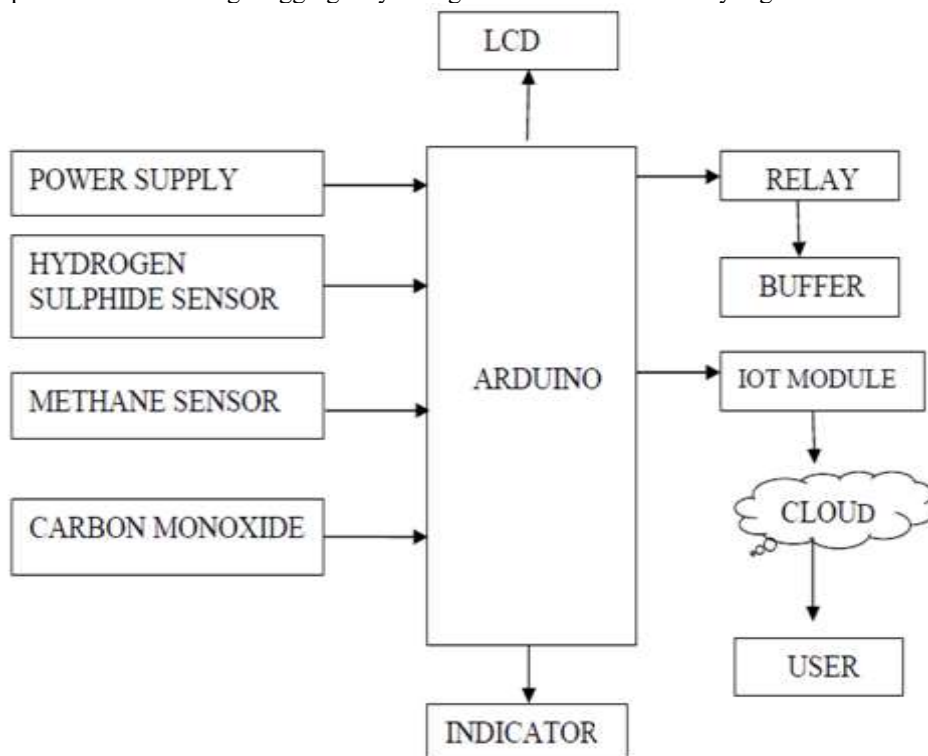


Fig. 1 Block Diagram of Proposed System

IV. MATERIALS AND METHODS

HARDWARE USED

- Arduino
- Power Supply
- Gas sensors
- IoT module
- Buzzer
- Relay
- Exhaust fan

**SOFTWARE USED**

- MPLAB IDE
- High tech c compiler
- Teraterm

V. RESULT AND DISCUSSION

Wireless sensor networks using Arduino meet our objectives of the project with less cost, long range, and increases the network lifetime. However, Sensor networks are considered as the key enablers for the different application like u agriculture monitoring and controlling, Industry monitoring, home automation etc. By small modification in the algorithm, this project can be used in agriculture/crop/environment monitoring and controlling system. Wireless sensor networks using Arduino meet our objectives of the project with less cost, long range, and increases the network lifetime. However, Sensor networks are considered as the key enablers for the different application like u agriculture monitoring and controlling, Industry monitoring, home automation etc.



Fig.2 Pollution Monitoring and Controlling Output

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