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Water Pollution Monitoring using Internet of Things: a Survey

Vijaya Kumar P
Dept. of MCA
Dayananda Sagar College of Engineering
Bangalore, India
vijaykumarroyal87@gmail.com

***Abstract*-In urban and rural areas, there is lot of pollution happing in water by ingredient of unwanted chemical like fluoride, chlorine, lead, mercury, arsenic, DDT, pesticides etc. and unwanted dust adding into it, this will impact on the health of the humans and animals too. Fresh and clean water is very limited in the world which is useful for agriculture, industry and for general uses. Discharge of poisonous chemicals, over-pushing of aquifers, long series spreading of pollutants and contamination of water bodies, like lake, ponds, sea with substances that motivate algal growth are few today's main causes of water quality degeneration. All these causes are monitoring and controlling using some chemical sensors and ubiquitous sensor networks, these sensors will transform the chemical information with range of concentration of specific components to total component analysis and sensor network will connects all other networks with smart sensors, those sensors will take information from physical environment and compute that collected information using some built-in predefined functions for the detection of exact input for processing data.To all these problems we are surveying the existing works which monitor the turbidity of water using Turbidity sensor. In our system the sensor is dipped in to the water where there is more pollution. The sensor is detached to the microcontroller, it's acts like the main function of system. The controller is connected to relay, which controls the gate of water valve. Once the purify data collect it is send to the cloud. In our project we use blynk server for IoT, whenever data is collected, it starts to plot the data on graph.**

***Keywords*-water pollution; turbidity sensor; Monitoring; Survey**

I. INTRODUCTION

The water pollutionis causing due to adding of massive amount industrial waste like chemicals are fluoride, chlorine, lead, mercury, arsenic, DDT and so on and also people adding plastic, daily wastages, by all these mixtures water get polluting day by day in high range, in many areas as urban and in rural some ponds, lakes are polluting with chemicals as well as agricultural chemicals like fertilizers and pesticides, now a days in most of agriculture's people using chemicals only that all things are adding into drinking water and also in domestic using water, it will effect on humans and animals.

Water quality issue is a big challenge that human is facing it every time. Here, the main group of water contaminants, their issues on health has been inspected, and procedures to reduce fresh water resources pollution. Importance is placed on chemical particles, [2].

In propose system we are using turbidity sensor to monitor the turbidity level of water, the turbidity sensor measuring level of turbidity in water to detect water quality. It is by measuring the light transmittance able to detect some adjourned particles in water and spreading rate is changes with the amount of total adjourned solids in water.
The actual invention relates to a turbidity sensor for sensing the density or contamination level in a sample fluid that passes through a filter test cell or the clarity level [3].

Turbidity sensor will give the status of water and presence level of impurities in that water, and it determines the purity of water for use in daily purpose. In turbidity sensors problem is identifies is that the light that beam light into the water sample can change its discharge characteristics in temperature with time and variations as well as changes in working characteristics can take place in the sensors are uses to sense the light that passes through the fluid or water [3].

The Internet of Things (IoT) is a fast-growing field in the phase of modern wireless and wired communications. The formal idea of the concept is the widespread existence around us of a variety of device – like Radio-Frequency IDentification (RFID) tags both active and passive, electronic devices, microcontrollers, transceivers, different sensor motes, actuators, mobile phones, vehicles, etc. which, by distinctive addressing

and nomenclature schemes, are able to interact with each other and co-operate with similar objects to reach their goals, the IoT performance will be visible in office, roads and domestic fields. In this occasion, demotic, guided living, e-health, magnified learning are only few examples of possible suitable technique in which the new ideas will play a main role in the future or in near condition [4].Using cloud storage can be used by the user to store the data and to process the data. This can be used by the available on-demand well performable applications and services from configurable computing resources, without waiting for local data storage. This causes decrease in the cost and maintenance [5].

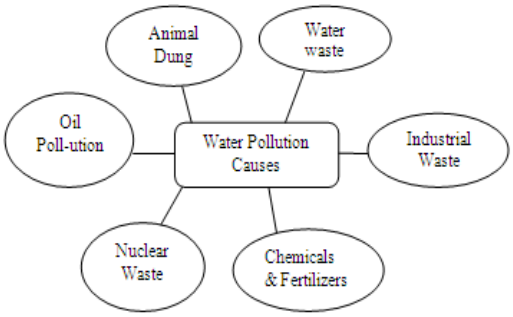

Fig. 1 Water Pollution Causes.

The Blynk is a Platform with Android and iPhone OSapps that controls Arduino and Raspberry Pi boards over the web. It's a digital dashboard that can be used to build a graphic interface (GUI) for the projects by simply using widgets and it collects data through sensors using the app interface and maintain the graph of condition of water per hour and sense the compatibility and respond-ability with sensors in every condition and store that information in server, and the server we using is Blynk Server, is an Open-Source Netty based on Java server. This is responsible for sending messages between Blynk mobile app and boards of various microcontrollers and single board computers(SBCs) (i.e. Arduino, Raspberry Pi., BeagleBone Black etc.) and it stores the data collected by the Blynk app which is provided by turbidity sensors or any other sensors networks and related work will followed by III phase of paper.

II. REVIEW ON WATER POLLUTION MONITORING

The controlling process of water pollution takes place a high position in the world, the water is affecting due to the mixture of industrial wastage and chemicals in urban, where as in rural area, the agricultural usages like pesticide and fertilizers are mixing into the water. In controlling these problems, the technology is helping to the nature and human being, by using IoT technologies we can control these by problems with various techniques.Using IoT, we are implementing sensors like turbidity sensor, PH level sensor, some chemicals level finding sensors for checking the contaminants and their level of occurrence deep inside the water and the wireless sensor network for sensing sensor data about water quality and also using optical tomography for predicting the turbidity level in water with the help of ANN and with ICA graph, it will give a predictable result to identify problems, these are all provide a smart water quality report for a successive practical process on water pollution and also using some other techniques to prevent all these problems with water pollution.

III. ISSUES IN REFERENCED SURVEYS

- Persistent organic pollutants (pops) like, aldrin, chlordane etc. have affected water systems from more than five decades on a global scale, during this time gynogenic pollutants, mining works, and risky waste sites are the most relevant sources of long-term territorial and local water pollution [2].
- By using led cells, turbidity sensors experienced some technical problems when trying to sense the state of fluids that are either at low or high turbidity levels [3].
- Chemical waste and oil spills are the major, primary forms of water pollution of water sources [6]. the new hardware is needed to detect the chemical waste and their percentage in the water.
- The rivers and other sources of water in developing countries are getting polluted due to waste from industries and release of untreated sewage in the main water sources of the area. in order to eliminate problems associated with manual water quality monitoring, proper planning are required [7].
- Dirty or contaminated water is being used in household lacking any appropriate treatments. one of the reasons for this happening is the lack of knowledge of public & administration and the requirement of infrastructure needed for water quality monitoring system [8].
- Issues caused by less awareness among human being about the problems of pollution. fastest technological development also contributing to an increase in the pollution statistics, especially in the urban areas. [10].
- In ömerli dam lake, lake water color is surely, indirectly coupled to all elements of water quality. many water quality components not showing as modifications in the color of water. [11].
- The polluted or contaminated water is used for drinking without any proper filtering in many developing countries. the reason for this is the lack of water quality monitoring system and which can create serious causes [12].

IV.CONCLUSION

Clean water is a finite in the world, essential for agriculture, industry and even human existence. To all

these problems we are proposing the system which monitors the turbidity of water using Turbidity sensor.In this paper the survey on water pollution monitoring has been conducted which monitor the turbidity of water using Turbidity sensor.

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