"Smart Tank Water Monitoring System using IOT"

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Abstract-Now with the advent of Machine to Machine Communication which leads to devices communicating among themselves and accordingly analyzing the data intelligently, we here have developed an "Intelligent IoT based water level monitoring system" pertaining to storage tanks being used by railways sector. The microcontroller (ARM7) based Water level monitoring is used to indicate the level of water in the tank to agent. Sensor Based Water Level Detection, it will check the water quality by using these parameters such as the water level, turbidity, gas and temperature are measured in real time by the sensors and it will be monitoring by an agent. This Paper is our motivation to prevent the water wastage by using technology and monitoring the system as a daily life device like laptop or mobile phone.

Keywords- Parts of Machine, Circuit Diagram of smart tank, Scope of Our Equipment

1.INTRODUCTION

The modernized way of providing water to the Tank at the correct time in a particular volume for the proper maintenance of the heat in order to get the maximum yields. India is having a lot of variety climate and weather conditions. These conditions range from intense heat to intense cold and from extreme dryness to excessive rainfall. Due to these reasons, smart Results is needed in Indian Environment the IoT is grounded on the rising developments in RFID (radio frequency identification), sensors, communication technologies, and IP. The root idea is to have smart sensors directly, without any conundrum of human involvement to deliver supreme strata of applications. Revolutionization of Internet, mobile and machine-to-machine technologies can be seen as the stepping phase of IoT. In the befalling generation of technology, it is foretold that IoT has the capability to summon the diverse technologies to enable new apps by agglomerating physical objects together in support of ingenious decision making. This is a plant environmental monitor system. It records the soil moisture, air temperature and air humidity of plants and will alert via a twitter notification on the mobile application when plants need water. The system is battery operated, wireless, Arduino and Raspberry based and comes with an Android application. The app

aggrandizes the user's ability to know at the current data and historical data like temperature, humidity on app Water is one of the most important substances on earth. People now days always want something that can make their life easier. Water quality monitoring is incredibly useful to keep the planet healthy and sustainable. Many transmittable diseases are water born. Most of the fresh water resources located near urban areas are contaminated due to the garbage dumped by the individuals or the release of chemicals from manufacturing industries. Overhead tank is one of the containers used to store drinking water. It was observed that main cause of deterioration in water quality is due to re-growth of microorganisms in overhead tanks and the distribution system, corrosion of pipe material, non-replacement of old pipes. There is a need for continuous real time continuous remote monitoring of water quality parameters within the water system as the concentrations of the pollutants lead to serious health consequences. However, in most areas, the traditional approach of water quality monitoring based on collection of water samples from different sources and subsequent analyses in laboratories is expensive, time consuming and does not allow simultaneous and timely monitoring of the water quality.

Literature Survey:

An Effective Water Quality and Level Monitoring System Using Wireless Sensors through IoT Environment

In most recent years, the usage of internet and its applications has grown rapidly. As everyone's work is dependent on it, without internet it would be difficult. As well as Now a day's wireless sensor networks are widely used and these are low power devices with a processor, storage, power supply, and a transceiver and with one or more sensors. In this project, we are going to combine to these both for the purpose of to reach about to collect the data from water environment) and is displayed on the webpage using wireless networks. Internet of things (Iota) is a network of devices with local intelligence (sensors, lights, gas pumps), which share control mechanisms to push and pull status and command information from the networked world. In this paper, a system is proposed for monitoring the weather changes in the environment. Embedded controlled sensor networks have proved as a reliable solution in providing remote control and sensing for environmental monitoring systems. The sensors are integrated with the system to monitor and compute the level of existence of gas,

Intelligent IoT Based Water Quality Monitoring System

With rapidly rising population in India, Fresh Water Management is very much essential which demands an increase in agricultural, industrial and other requirements. The Quality of Fresh Water is characterized by "chemical, physical and biological" content Traditional water quality monitoring involves three steps namely water sampling, Testing and investigation. These are done manually by the scientists. This technique is not fully reliable and gives no indication beforehand on quality of water. Also with the advent of wireless sensor technologies, some amount of research carried out in monitoring the water quality using wireless sensors deployed in water and sending short message to farmers about water. Also research been carried out in analyzing the quality of water using machine learning algorithms too

2.METHEDOLOGY

- This study discusses the design and current development of system having low cost to monitor real time values and also to control the system using IoT. To measure the various parameters of the water, array of sensors is included in the system.
- The parameters which can be measured are like temperature, PH, turbidity of the water. Core controller can process the value measured from the sensors. The Arduino Uno model can be used to control the system. Lastly, to access the sensor data on internet, cloud computing can be used. In 2016, Divya Kaur presented a paper on "IOT based Water Tank Control system "for prevent the water wastage. Making a control system to automatically control the water pump requires [1] careful observation of

what people do as their daily activity to make sure that the tank is full. In almost all over India every state has a State Water Supply body which is responsible for development and [1] regulation of water supply in state. Due to scarcity of water the release of water is controlled and done at certain time(s) in a day. So this paper is aimed at presenting the project in embedding a control system into an automatic control system into an automatic water level controller using wi-fi module.
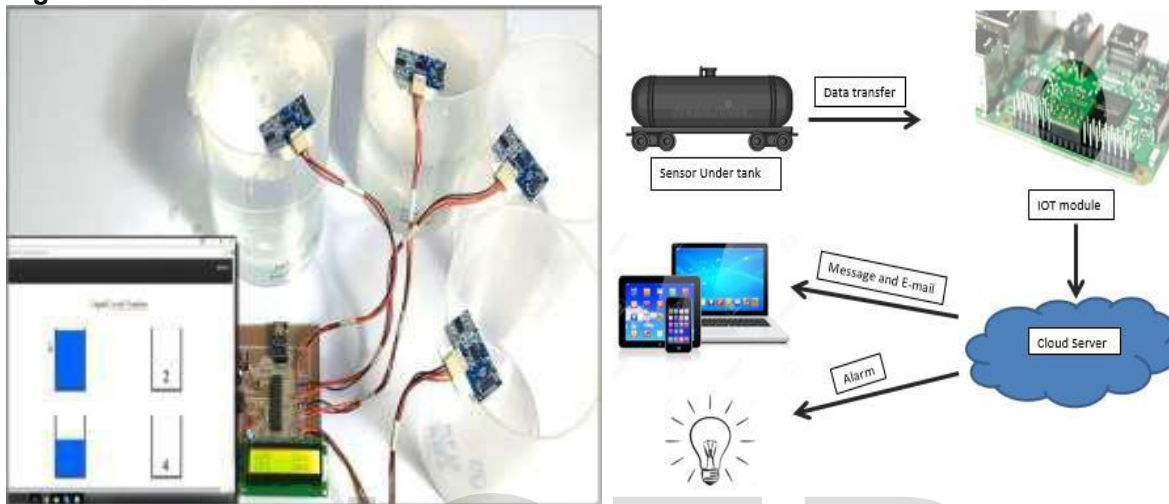
3.RESULT
3.1. Figures and Tables

Fig.1. **design of machine**

- **PARTS OF MACHINE AND ITS SPECIFICATIONS**

Table: DESCRIPTION AND GENERAL LAYOUT OF MACHINE UNIT: Part list

Sr. No.	Part List		Qty
3.1	soil moisture Sensor		2
3.2	Connecting Cables		-
3.3	LED light bulb		4
	3.3.1	Red bulb	2
	3.3.2	Green bulb	2
3.4	Node MCU		1
3.5	GSM module		1
3.6	Power unit		1
	3.6.1	Electrical power plug	1

2.Soil Moisture sensor

Sensor Inexpensive sensors consisting of two electrodes and probes for measuring the soil resistance are often used for residential purposes. A higher average dielectric constant for the soil is caused by a higher water concentration. The soil moisture sensors measure the propagation speed in a buried transmission line to measure the average dielectric constant. These sensors provide data at the current time and improve the efficiency. The sensors are easy to install and require less protection.

3. LED bulb

Fig. 3: LED bulb

4. Node MCU

Node MCU is an Open-source, Interactive, Programmable, Low cost, Simple, Smart, WI-FI enabled. It Contains firmware which runs on the ESP 8266 Wi-Fi SoC from Espresso if Systems.

5.GSM Module

GSM/GPRS module is used to establish communication between a computer and a GSM-GPRS system. Global System for Mobile communication (GSM) is an architecture used for mobile communication in most of the countries. Global Packet Radio Service (GPRS) is an extension of GSM that enables higher data transmission rate. GSM/GPRS module consists of a GSM/GPRS modem assembled together with power supply circuit and communication interfaces (like RS-232, USB, etc) for computer.

1. Receive, send or delete SMS messages in a SIM.
2. Read, add, search phonebook entries of the SIM.
3. Make, Receive, or reject a voice call.

GSM Architecture

The GSM architecture is divided into Radio Subsystem, Network and Switching Subsystem and the Operation Subsystem. The radio sub system consists of the Mobile Station and Base Station Subsystem. The mobile station is generally the mobile phone which consists of a transceiver, display and a processor. Each handheld or portable mobile station consists of a unique identity stored in a module known as SIM (Subscriber Identity Chip). It is a small microchip which is inserted in the mobile phone and contains the database regarding the mobile station.

POWER UNIT

The Essential power needed to the working of sensor is being offered by the power unit which is as shown below in fig.
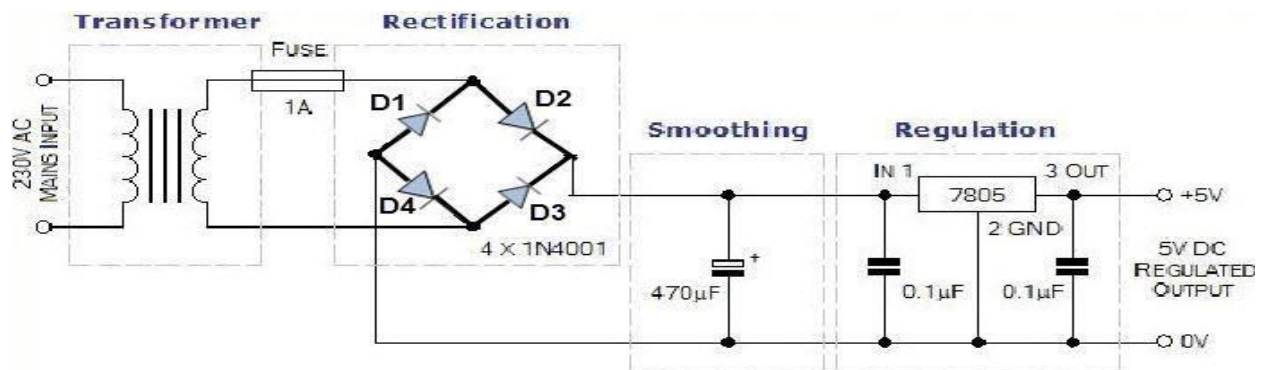
Working

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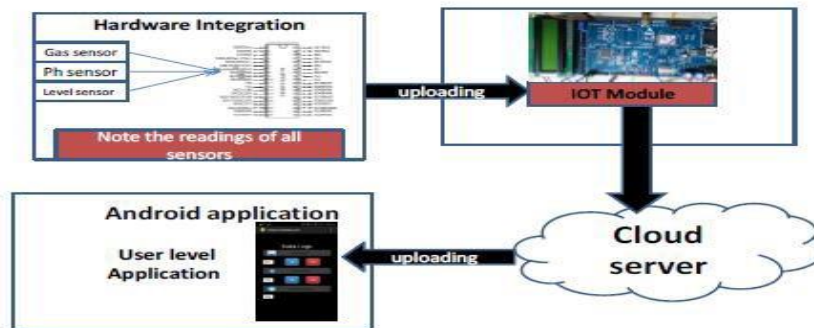
DETAILED HARDWARE DESIGN

Fig. 4: hardware design

MODULE DESCRIPTION

1.   Module 1: Hardware Integration:
This module consists of the hardware integration process. Integration chip PIC 16F877A is a main device, it collects the readings of the sensor and transfer to IOT module.

2.   Module 2: IOT Module:
IOT module is an interface between the cloud and the sensors. All the details obtained from the MODULE 1 is uploaded in the cloud memory through IOT.

3.   Module 3: Cloud server:
Using php, Java Script and My Sql the data's are transferred to Web server. End users collect the data from the web server through android application.

4.   **Module 4: Android Application:**
 Android Application is the direct way to reach the End user

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Advantages of Our Equipment

- In this paper an efficient, real time water quality monitoring system based on IOT is presented.
- Central base station and nodes are connected through IOT networks and base station is interfaced to internet so that users can login and get the real time water quality data.

- Future works include the using of more efficient routing algorithms to extend the network to wide area.
- A future work also lies on Integration of turbidity sensor, dissolved oxygen sensor and color sensor to the sensors used in this work.

4.SCOPE of Our Equipment

- The proposed approach is to add security in the notification area of the project. Since notification is sent through twitter it is mandatory to add additional security in the system.
- By applying multiple encryption algorithm, we can add security to the architecture. This algorithm may be Blowfish, SÁ, two fish, advance encryption standard (AES). As the twitter notification is triggered in the thinks peek software the data will be encrypted using any of the encryption algorithms so that the data is secured.
- There are multiple policies which are applied to make internet secure. But its studied that less number of policies are applied. Twitter architecture is based on networking domain and cloud sub domain which is keen to network security.
- Our project scope can be improved by adding feature which can tell the climate condition and water the plants/crops according to the need.
- If rain is predicted more, less water is supplied to plant. The total cost of providing enough water to the plants throughout a yearlong can be calculated. By storing the values constantly, we can study about the nature call such as Drought

5.DISCUSSION AND CONCLUSION

• Proposed system is more suitable to monitor water level in real time.

• Furthermore, to monitor data from all over the world IOT environment is provided

• cloud computing technology is used to monitor data on the internet. Moreover, to make system user-friendly web browser application is there.

• Therefore, the system will be low cost, faster, more efficient, real time and user friendly. Thus, we can fulfill aim and objective of the proposed system.

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